

A detailed illustration of a bald eagle in flight, facing left. The eagle has a white head and neck, a yellow beak, and yellow talons. Its wings are spread wide, showing dark feathers with lighter undersides. The background consists of broad, diagonal stripes of red and white, suggesting a stylized American flag. The eagle is positioned in the lower half of the frame, with its wings reaching towards the top corners.

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MILES
ABBOTT

Virginia Wildlife

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Outdoor Recreation in Virginia*

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COVER: Our national emblem, the bald eagle—illustrated on this month's cover—appears to be in serious difficulty. Read "Status Report On The Bald Eagle" on page 4. Cover artist: Jackson Miles Abbott of Alexandria, Virginia.

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Young Sportsmen Never Become Juvenile Delinquents

WITH juvenile delinquency a mounting problem in many of the large cities of the country, the matter of developing a greater appreciation of sportsmanship among America's youth takes on added importance. There is no better way for a father to bring to his son a better understanding of the finer things in life than to acquaint him with the everyday "mysteries" of Nature to be encountered on any free-and-easy jaunt into the woods, fields, or along the waterways.

Whether the stroll be through a city park, across a countryside, or along a stream or lake, the parent can easily find and point out to his son examples of Nature's handiwork in plant, insect and animal life that will, in the long run, prove more intriguing to a clean-minded youngster than the dubious thrills of a rendezvous with a neighborhood gang on a city street corner.

Even if a trip to the country is impractical, there are hundreds of interesting revelations to be found on the small backyard lawn of a city home if one will only take the trouble to search for them. In fact, each small plot can become a "backyard jungle" if one is inclined to explore it closely. There are a number of nature books available that guide the reader in what to look for and where to find it. Such an activity can be surprisingly revealing and highly educational to both adult and youngster. Nature study can be a fascinatingly absorbing pastime that can be turned into a tool with which to combat juvenile delinquency.

It would be even better and more effective if both father and son become interested in the participative sports—such as hunting and fishing. Here is a field in which the best type of father-son relationship and understanding can be cultivated in a high degree. On a hunting or fishing trip, the boy gets to really know his father, and the father can understand his son. The father is always pleased when he can teach his son something worth while or introduce him to new horizons or new fields of activity. And such attention is bound to create more affection and respect in the heart and mind of the son.

These are clean sports in which good sportsmanship is practiced. They are enjoyable sports which take man and boy alike out into the open air and away from the tinsel or tawdriness of artificial living. Unconsciously, the spirit of fair play is instilled into the youngster and he begins to think in terms of sportsmanship as applied to everyday life. These are physically healthy sports, too, which not only build character but bodily strength as well.

And youngsters naturally take to this sort of activity. If the father's business activities are such that he cannot find the time to enjoy these sports along with his son, members of sportsmen's clubs are always willing to undertake the task of introducing the youngster to outdoor enjoyment for him.

The ideal situation is created, however, when father and son can enjoy the outdoor sports together. This close association on a man-to-man basis is highly beneficial to both and is reflected in the home life of the entire family. A noted judge of a juvenile court once said that no boy who loved to hunt and fish had ever appeared for trial in his court. Good sportsmanship and juvenile delinquency simply do not mix. The easiest way a father can find to make sure that the devastating finger of juvenile delinquency will never touch his home is to be a pal to his son and take him hunting or fishing as often as possible. The important thing is to start as soon as possible so that the father-and-son relationship has a priority on a boy's judgment of right and wrong over the influence of what a boy must do to "belong to the gang at the corner."

—J. D. MITCHELL, *Remington Arms Co.*

Suggests Fertilizing Streams

I WAS catching up on my back reading yesterday in VIRGINIA WILDLIFE when I came across the article "Trout—Stocked or Native" (June, 1961). I thoroughly agree with Mr. Carpenter's summation of what happens to stocked trout when they are turned loose in a stream.

I have fished the streams of Virginia for something over 40 years and have made some study of them. There are three, Stoney Fork, Bedford County, and Tumbling and Brumley in Russell and Smyth counties, that have consistently held their trout population through all these years with little or no stocking. The thing that these streams have in common is that all of them have their source in a swamp. This doesn't apply to Stoney Fork any more; the Skyline Drive put a fill through most of Stoney Fork's swamp and ruined it, and the fishing too.

These swamps at the head of the stream furnish a place where the microscopic underwater life can grow and start the food cycle that eventually produces food of a size that the trout population downstream can use. They also hold water and tend to distribute the flow over the dry seasons. The trout in these streams can only be caught with flies or worms in the spring because they have never seen any other food. If you throw a spinner into one of the pools, every fish in sight will get under a rock.

Assuming that all of the above is true, all you have to do to get a good fly fishing trout stream is to cultivate a swamp at its source. While you can approximate this condition by damming up some of the tributaries, there is another way I would like to see tried that is a whole lot easier. We all know that you fertilize a farm fish pond to raise fish food. The kind of fertilizer and the amount has all been worked up to the end that the method is very satisfactory. It seems to me that you can accomplish the same thing in a trout stream by putting a few barrels of fertilizer at the headwaters with a pipe from upstream leading into the barrel and so arranged that a drop or so of the dissolved fertilizer will fall into the stream per minute. If this solution could be put into the back water of a low dam or beaver pond it would be much more effective. In any case, the procedure would immediately stimulate the growth of plankton in the upper reaches of the stream and start the growth of fish food downstream.

I don't recall ever having seen that this procedure has been tried on a trout stream. If it hasn't, it would cost very little to try it on one of the barren streams for a year and keep track of the change in natural fish food raised in the stream. If it works it will certainly be cheaper than raising trout in a hatchery. I don't think it is the method of taking fish out of a stream that makes for good fishing but the ability of the stream to provide an adequate supply of food that spells the difference.

Norton Stone
Roanoke, Virginia



Is our national emblem, the bald eagle, on the verge of extinction? Its drastic decline has the experts worried.

STATUS REPORT ON THE BALD EAGLE

By JACKSON MILES ABBOTT
Alexandria, Virginia

OUR national emblem, the bald eagle, appears to be in serious difficulty. Our first awareness of trouble came about through banding studies conducted by the late Charles Broley of Tampa, Florida. Mr. Broley, renowned among ornithologists as "The Eagle Man," banded 814 eaglets on the Florida Gulf coast between 1939 and 1946. He noticed that starting about 1917 the ratio of immature to adult bald eagles dropped steadily from a norm of about two out of five to a low in 1956 of one out of five, a 50 percent reduction in immature eagles in 10 years! His banding studies revealed that man was directly responsible for the failure of many eaglets to reach maturity. Of the eaglets banded by Broley between 1939 and 1946 he had returns of 48 bands, all but two from immature eagles shot by misguided persons who "mistook" the all-brown birds for "hawks" or who habitually carry a gun and shoot at any large bird they see.

Many persons are still convinced that the eagle is a "bad" bird and eats pigs, chickens and young livestock and also carries off babies of the human race! These people won't believe that the bald eagle in our area eats only "trash" fish and an occasional crippled waterfowl left behind by hunters.

Broley's studies of eagle nests in Florida revealed a parallel decrease in nesting success: the hatch rate of eagle eggs dropped from about 75 percent of the eggs laid prior to 1917 to 33 percent by 1956.

This rapid decline in ratio of immature to adult eagles was also noted by professional and lay ornithologists in

other sections of the United States. At Hawk Mountain, Pennsylvania, where Maurice Broun has kept statistics since 1931, the percentage of immature eagles observed during migrations dropped from a pre-1945 norm of 36.5 percent to 23.1 percent in the 1954-1960 period.

A decline was also apparent to the writer in the Potomac River sector of the Chesapeake Bay region, but not until after 1952. In 1956, through the sponsorship of the Atlantic Naturalist Society (in the D. C. area) and the Virginia Society of Ornithology, the writer solicited participation of the members of various bird clubs to conduct a bald eagle nest survey in the Chesapeake Bay region (i.e., that area bounded by southern New Jersey, the Appalachian Mountains, the Richmond-Norfolk area and the Atlantic Coast from New Jersey to the North Carolina/Virginia line). Results were spotty and generally unsuccessful, due chiefly to the paucity of observers in this vast area and the impossibility of checking, from the ground, the contents of all eagle nests. Limited eagle nest survey work by the writer in 1959 from a helicopter convinced him that this is the only practical method for accomplishing nest surveys over a large area.

In 1960 the National Audubon Society initiated a nationwide, five-year eagle census and nest survey to start in Florida in 1961, include the Chesapeake Bay area by 1962, and, eventually, add other known eagle concentration areas, such as the Great Lakes region and coastal Alaska.

1962 Chesapeake Bay Eagle Census

In January, 1962, the first organized bald eagle census of the Chesapeake Bay region was accomplished by some 65 persons, including representatives of the National Audubon Society, the Audubon Naturalists Society of D. C., The Virginia Society of Ornithology, the Delaware Valley Ornithological Club, the Lancaster (Pa.) Bird Club, the U. S. Fish and Wildlife Service, and the Maryland and the Virginia State Game Commissions. About 62 percent of the entire Bay area shoreline was covered by both ground and air observers on January 13th, and an additional 19 percent of the shoreline was covered by both ground and air on other dates. A total of 200 bald eagles were counted, of which 48 were immatures (24 percent of the total).

The distribution of the eagles counted was as follows:

1. 45 adults and 11 immatures (28 percent of the total) were seen along the shoreline of the Bay proper (31 adults and

Commission Photo by Kesteloo



The National Audubon Society instituted a five-year eagle census and nest survey in 1960. The first Chesapeake Bay region census was conducted in January 1962.

6 immatures were in the North half of the Bay);

2. 4 adults and 1 immature (2.5 percent of the total) were seen along the coast between Rehoboth Bay and Chincoteague, Va., on the Christmas counts (Dec. 27-Jan. 1, 62). On January 13 no eagles were seen between Rehoboth Bay and Ocean City, the only part of the coast shoreline covered that day. Air coverage of the coast from Kiptopeke, Va., to Chincoteague, Va., on January 25 revealed no eagles.

3. 103 adult and 36 immatures (69.5 percent of the total) were seen well up the major rivers feeding into the Bay, with distribution as follows (north to south):

- a. 2 adults and 5 immatures (3.5 percent) were in the Bombay Hook refuge, on the Delaware River;
- b. 7 adults and 3 immatures (5 percent) were up the Susquehanna River;
- c. 7 adults and 5 immatures (6 percent) were in the Patuxent River;



Often confused with the bald eagle is the osprey, or "fish hawk."

- d. 54 adults and 16 immatures (34.5 percent) were along the Potomac River;
- e. 1 adult (0.5 percent) was well up the Rappahannock River;
- f. 6 adults (3 percent) were along the York River;
- g. 27 adults and 7 immatures (17 percent) were along the James River.

The significance of these figures will be apparent only after comparing them with results of winter eagle censuses over the next three or four years. Then we can see whether the trend in ratio of immatures to adults and in total number of eagles is actually going up, down, or remaining the same.

1962 Eagle Nest Survey

The second part of the annual bald eagle survey is the nest search and active nest check. Since eagles normally lay eggs in February in the Bay region, the nest search was planned to be accomplished between February 15 and mid-March. Allowing for a 30-day incubation period the active nest check was scheduled for mid-April. Data on nest locations was supplied by the general public (as a result of publicity in various newspapers and magazines), by people representing the groups who participated in the eagle census, and by the U. S. Army. Army participation was confined to

Immature bald eagles closely resemble golden eagles such as the one illustrated, making complete protection of golden eagles advisable if the bald eagle is to be saved.



Commission Photo by Kesteloo

helicopter flights provided by the Third Transportation Company (Helicopter) at Davison Airfield, Fort Belvoir, Va.

This Army support provided complete coverage of the Potomac River from Point of Rocks, Maryland, south to the Chesapeake Bay, the Patuxent River, and the western shore of the Bay from Annapolis to Point Lookout, Maryland. Fifteen separate flights in H-13 helicopters were made by four volunteer observers in canvassing the area mentioned.

At the time of this writing, conclusive results from the 1962 Chesapeake Bay region eagle nest survey have been received only from that area covered by the Army helicopters, described above. The remainder of this discussion will, therefore, be limited to a resume of findings from this part of the survey.

Starting on February 15 and continuing to April 1 the area was surveyed to locate eagle nests. All nests located were plotted by the observer on scale 1:25,000 map sheets which he carried with him. Nests occupied by eagles were specially marked for recheck in April. On April 17 two helicopters, each flying an observer, checked those nests found to be active on earlier flights to determine their nesting success. The results of these flights were as follows:

1. A total of 114 eagle nests were located, of which 22 were "active" (21 had an adult eagle brooding or standing on the nest when found and one had a single egg in the nest but no eagle near).

2. Of the 92 inactive nests, eight had disappeared by April 17, all probably blown down in heavy winds except for one where the nest tree was cut down by men clearing vegetation along a high power line.

3. Of the remaining 84 inactive nests, three were occupied by great horned owls and nine by ospreys.

4. Of the 22 active nests:

- a. Three could not be relocated and either had blown down or had been mis-plotted on the map on the initial nest search flight.
- b. One could not be re-checked as it was in a military restricted area where weapons firing was in progress on April 17.
- c. One (which had a single egg in it but no eagle near when found) was not revisited.
- d. One had one eaglet with an adult present which aggressively "stooped" at the helicopter and chased after it.



Opossums may cause some eagles to abandon their nests.

- e. Five nests still had adults brooding (two had a single egg, two had two eggs, and in one case the adult was not disturbed so the contents were undetermined).
- f. The remaining 11 "active" nests were all found to be empty and apparently abandoned. In one case there was positive evidence as to why the nest was abandoned. An adult eagle was observed from a helicopter to be brooding on the nest on February 18 and 25. When next observed from a helicopter (on April 1), the nest was empty and no eagles around. The nest tree is only about 60 yards from a high power line where men were observed to be actively engaged in brush clearing with power saws on April 1. It is probable that this human activity over a period of days caused the eagles to abandon this nest.

In another case, an "active" nest (two adults *at* the nest) was reported by an observer from a boat on April 8. The helicopter check on April 17 revealed the nest to be empty with no eagles around it. This nest may well *not* have been "active" in the sense that eggs had been laid; however, it could well have been a "feeding" nest. On several occasions an observer in a helicopter has seen an adult eagle eating a dead fish on an empty nest, which from the ground might well appear to be an eagle "feeding" young.

If we eliminate this one nest, we are left with a total of 21 truly active nests (adults brooding or eggs visible from a helicopter) of which 11 (52.3 percent) had definitely been abandoned and were empty; three others could not be relocated: two more were not re-checked; one had one eaglet; and the remaining five each had an adult brooding on April 17.

Of the five nests which were positively active on April 17, one had been an inactive nest when first located by helicopter on March 30, yet on April 17 had an adult brooding on one egg.

Another of these five "still active" nests was not found prior to April 17, on which date an adult was brooding two eggs. (Question: Was this nest overlooked on two earlier helicopter flights over the area, or is it a "late" nest?) A third "still active" nest was discovered by helicopter observation on March 6 with an adult brooding; when checked by helicopter on March 23, it appeared empty and no eagle near; yet, on April 17 an adult was brooding one egg! (Questions: Did the eagle actually have an egg on March 6 and, if so, was the egg actually "gone" on March 23 or do eagles cover their eggs with nest lining (as do some other birds) when they leave the nest voluntarily; or, was the egg seen on the 17th a newly-laid second nesting attempt?)

A fourth "still active" nest had an adult brooding when found on March 20 and again on April 17, but the contents were not ascertained. The fifth and last of the "still active" nests had an adult brooding on February 18 and 25, on March 23 and April 17. On the two latter dates the adult was flushed and revealed one egg. This egg was obviously infertile.

The answers to the above questions and to a key question, Why do over 50 percent of the nesting pairs of bald eagles abandon their nests?", will, hopefully, be arrived at by the end of this five-year survey. Some partial answers can be given now, although they are inconclusive and the evidence, though factual, is scanty.

In some few cases abandonment is known to be directly caused by human activity near the nest. One observer in a helicopter reported a dead adult eagle sprawled in a nest, probably shot.

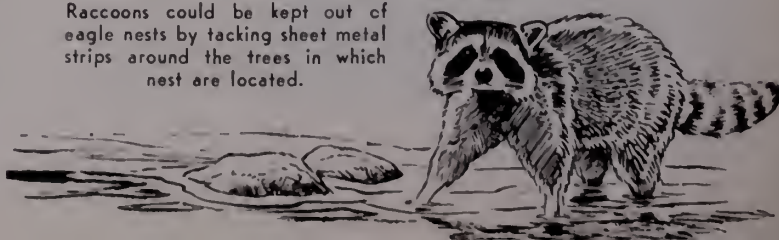
Circumstantial evidence indicates that at least several pairs of eagles in the Bay region are sterile and lay infertile eggs. Broley's Florida experience with eagles indicated that prior to 1947 the "normal" infertile egg rate was about 23 percent (i.e., the eggs in 23 percent of the nests in which eggs were laid failed to hatch.) By 1956 this percentage had jumped to 53.5 percent (of 43 pairs of eagles, 23 pairs laid eggs which didn't hatch).

In New Jersey, where eagle nest survey work has been going on since 1956, observers are convinced that raccoons break up many eagle nesting attempts. Raccoons have been seen in formerly active eagle nests by several observers in New Jersey. So far there is no direct evidence or report in the Chesapeake Bay region of a raccoon in an eagle's nest. However, they and the opossum are night prowling, tree climbing predators with a taste for birds' eggs and could undoubtedly force the docile, rather phlegmatic bald eagle off her eggs, particularly at night. Concerning the bald eagle's lack of pugnaciousness, in only one case did an adult eagle show hostility towards a helicopter flying over an active nest; this is the nest which contained the only eaglet observed in the survey. As the helicopter approached within 100 yards of the nest tree an adult sitting on the nest with the eaglet flew off and made several "stoops" directly at the helicopter and then chased it for nearly one-half mile as the aircraft flew away.

A practical method of eliminating the raccoon or opossum threat (if it is a threat) would be to loosely nail or attach a two-foot-wide strip of sheet metal around every nest tree about five feet from the ground. The metal could be painted brown to blend with the tree. This "climb proofing" of nest trees before the eagle's nesting season begins (i.e., before the end of December), could lead to a conclusion whether or not these animals are a threat. If the percentage of eagles abandoning nests drops after "climb proofing" the nest trees, then we can safely say the night climbing predators are a factor; if the percentage remains about the same, then we must conclude that the animals are not a factor and continue to look for a causative agent.

Intensive, careful study, the solicitation and compilation of observations from all sources, and objective analysis of all reports over a period of years will, it is hoped, solve the problem of what is causing the decline in nesting success of our national bird. All readers are urged to submit their observations to the following regional coordinators of the bald eagle survey: Virginia observations to Fred Scott, 115 Kennondale Lane, Richmond, Virginia; Maryland observations to Joseph Larson, P. O. Box 1510, Annapolis, Maryland; Pennsylvania and Delaware observations to David Cutler, King of Prussia, Pennsylvania.

Raccoons could be kept out of eagle nests by tacking sheet metal strips around the trees in which nest are located.



Fitting Out Your Outboard For Fun And Safety

(Part I)

By JIM RUTHERFOORD

Radford, Virginia

NOTHING enhances the fun of outboard boating as much as a shipshape, well found boat—one that carries aboard not only the minimal safety equipment prescribed by law, but the extras that add not only to safety afloat, but to your personal comfort as well. In fact you can more than double your boating fun by the addition of a few low-cost, or home-made, accessories.

The rapid increase in the popularity of pleasure boating in recent years has brought hundreds of thousands of novice boaters to the boating scene, many of them inland, where there is little opportunity for them to learn nautical ways from experienced, salt-water skippers who grew up in a boating environment. This article, then, will deal with information which I hope will be of help to the inland skipper: the family boater who plies such waters as Kerr Reservoir, South Holston, Claytor Lake and the soon-to-be-completed Smith Mountain Reservoir, near Roanoke. It is hoped that the tidewater boatman will also find much of the information useful.

According to recent estimates released by the Outboard Boating Club (OBC) there are over six million outboard motors and nearly four million outboard boats in use for recreational purposes in the United States, and outboard powered boats outnumber inboards by more than five to one.

In Virginia alone there are more than 45,000 boats of more than 10 horsepower registered under the Virginia Boating Law.

According to OBC's estimates, the average outboard boat is about 16 feet in length and is powered by an outboard of some 30 horsepower—a far cry from the fisherman's little “kicker” of a few years ago.



"Nothing enhances the fun of outboard boating as much as a shipshape, well found boat."

Illustration Courtesy
North Carolina
Wildlife Resources
Commission

While fishing is still the major reason for the purchase of an outboard outfit, more and more buyers indicate that their new boats are to be used for family fun and recreation as well. Such sports as water skiing, family cruise-camping, bay and tidewater fishing have caused the market for larger, more powerful outfits to gain rapidly in popularity as has the desire for just more speed on the water. The speed mania can be overdone, and the beginning boater is advised to keep his power plant purchase within the limits of safety and good sense.

The manufacture of higher horsepower outboard motors, now up to 100 horsepower, was, perhaps, well-advised and the big motors are a boon to experienced boatmen owning larger runabouts and cruisers, but they also allow unknowing buyers and unthinking dealers to float a good many dangerous outfits. So, when you start thinking about buying that new outfit for skiing and other family use, try to match the outfit for safety as well as performance. An experienced boating friend and a conscientious dealer can be of great value in advising you in this respect.

Now that you have your new boat, what then? Your boat and motor are just the beginning of the things you need for maximum fun and safety on the water.

First, you must comply with the Virginia Motorboat Safety Act in regard to the numbering of your vessel. If your boat is equipped with a 10 or more horsepower motor, it must be registered and numbered. Applications for registrations of boats should be sent to the Game Commission, P. O. Box 1642, Richmond, Virginia.

The average outboard is designated as a “Class 1” motorboat; that is, a boat 16 feet in length or over, but less than 26 feet. As such there are certain items required by law to be aboard your boat at all times when it is being operated.

There must be at least one Coast Guard-approved buoyant lifesaving device for each person aboard. You may use either buoyancy cushions, life preservers, life vests or ring buoys to comply with the regulation. We prefer a combination of vests, cushions and a ring buoy. The bulky, cork-block life preservers take up too much space aboard the boat to even be considered. Life vests should be worn by small children and non-swimming adults. Cushions are good for many uses, particularly on inland waters, as they may serve as extra seating either afloat or ashore. Be sure to buy the type which has the flotation material sealed in plastic inside the outer covering. Otherwise the material will, in a short time, absorb moisture, pack down and become useless as a life-saving device. This also applies to the material in the life vests.

Do not allow your life vests and cushions to be used as water toys or for swimming devices. Keep them dry and ready for emergencies. Water skiers must, of course, wear an approved-type life preserver, or vest, when skiing unless there is an observer in the pull boat. Many skiers prefer to wear the less bulky, plastic-foam ski belts. Also, we never ski in crowded waters unless we do have an experienced observer along, not only to warn us of a fallen skier but to handle lines and render other assistance.

The life ring, or ring buoy, is an excellent device to have on board to throw to a man overboard or a swimmer in distress. The ring should be made fast to a line, the other end of which is secured to a cleat on the boat. The life ring also makes an excellent swimming float when the “crew” desires a dip before lunch afloat. Being made of cork, the



Jim Rutherford Photo

Although motors and boats being purchased today are larger than in previous years, fishing is still one of the major factors in deciding the purchase of outboard outfits. The larger outfits offer greater safety and at the same time expand the fisherman's area of operation.

ring buoy is not subject to the rapid deterioration that affects the kapok-filled devices.

If you plan to do any boating after sunset, your outfit should be equipped with the prescribed running lights in good working condition. Many boats now come with these lights installed as standard equipment. Make sure they are maintained in good operating condition. The combination bow lantern, showing a green light to starboard (right) and a red light to port (left), often creates a glare that is a hindrance to the proper operation of the night-running boat. It is permissible to mask the lights in such a manner as to eliminate these annoying reflections provided the light still shows through the prescribed arc for the required distance. Sometimes the back glare can be eliminated by painting an area of the deck, near the light, with a dull, black paint. It is also permissible to use the separate, screened, port and starboard lanterns such as are required on motorboats of Class 2 and 3.

The white stern light is also a frequent source of annoyance to the nighttime pilot. A lamp of lower intensity or a partial masking with black paint or electrical tape will effectively reduce this glare. Just make sure that the light meets the requirements of law.

An oft neglected regulation is that which requires the display of a white anchor light when your boat is anchored at night outside special anchorage areas. An anchor light is a 32-point white light that must be forward where it can best be seen at a height not exceeding 20 feet. Your running light is not an anchor light and may not be used as such.

The nighttime boatman should also equip his boat with a spotlight, or searchlight. On the smaller, Class A and 1, runabouts, we have found the deck-mounted searchlights to be a hindrance rather than a help. The powerful lights bounce blinding reflections off the deck and they are limited in the area which can be covered from the deck position. More satisfactory are the hand-held types which may be aimed in any direction. One such hand-held light may be mounted in a swivel mount clamped to the windshield, from which position it is easily removable. Much to be preferred, however, are the sealed-beam lights designed for use in automobiles. These are made from hand-held operation only and may be held in a clip on the instrument panel or near the control position when not in use. Such lights usually are equipped with a plug which fits the cigarette lighter socket of the boat or auto, so that they may be safely stowed away when the boat is being used in the daytime.

A good flashlight, of at least moderate power, with fresh cells and a spare bulb should also be kept aboard at all times for signalling and other useful purposes.

Your Class 1 craft is required to be equipped with hand-, mouth- or power-operated whistle or horn of at least one-half mile audible range and which is capable of producing a blast of at least two seconds duration. Most boatmen prefer a Freon gas or electrically operated, deck-mounted horn. The gas-powered devices are low in cost and dependable, even when the boat's battery may have failed.

Though not required by law, the U. S. Coast Guard Auxiliary recommends at least one anchor. Better have two: a service anchor and an emergency anchor. If you're a fisherman you will certainly have some type of anchor aboard, but there should also be a really dependable "hook" that will hold you in a blow. An anchor is about the best boat insurance we know of outside of the knowledge and practice of good seamanship and safety afloat. Make sure that there is sufficient good quality anchor line of sufficient size aboard to permit putting down both anchors. The usual rule is a scope of at least seven to one, or an anchor rope at least seven times as long as the depth of the usual anchoring water. On the inland lakes, where most of our boating is done, we feel that 100 feet of three-eighths-inch nylon rope is sufficient for each anchor for our 17-foot runabout. Although the nylon is somewhat more expensive than good Manila line, a smaller diameter line can be used and this may be more easily stowed than Manila. Also it may be stowed wet without damage or deterioration.

Your Class 1 outboard is required to carry at least one Classification B-1 fire extinguisher aboard if as much as one-third of the length is decked over or the boat has a false bottom or any other place where explosive fuel fumes may collect. Therefore, the regulation applies to practically any outboard runabout. It is suggested that you do not try to avoid this slight extra expense when fitting out your boat. The small cost of an approved-type fire extinguisher may not only save lives but may prevent destruction of or severe damage to your outfit. The pressurized, dry-chemical type extinguisher is to be preferred over the efficient CO₂ type as it takes up less room aboard.

As to instruments, we feel that only two are essential to boating on the moderate-sized lakes we have in Virginia or on the TVA lakes in our neighboring state of Tennessee: a compass and a water speed indicator. Even the compass may be left off if you will not navigate the larger lakes.

The speed indicator is particularly handy when pulling water skiers, in that it allows the boatman to hold a constant speed for the skier. The indicator is also essential for testing various propeller installations for performance and for checking fuel consumption at various speeds.

Of course if one wants to go "all out" on instrumentation, his imagination is the limit. A clock, barometer, tachometer, depthfinder, even a "fishfinder" will have a certain amount of usefulness, and, certainly, they do dress up the instrument panel but are not necessary items for the freshwater boatman here in the South.

A Citizen's Band radio transceiver may add a lot to the safety and convenience of the outfit if there are enough CB-equipped boats in your area to provide good communications, and further provided there is not too heavy radio traffic on the channel selected in the area. Unless you can afford a multi-channel transmitter, the radio can better be left off unless, of course, you are a member of a boat club or Coast Guard Auxiliary flotilla or other group in which all boats operate on the same frequency.

(Part II Next Month)



Wood ducks are one of the few duck species which regularly nest in Virginia.

DUCK PONDS FOR VIRGINIA

By OLAN W. DILLON, JR., *Biologist*
Soil Conservation Service, Ithaca, New York
S.C.S. Photos

HOW can I attract ducks? What should I plant for ducks? Are fishponds good for waterfowl? Can I attract ducks to a pond in Virginia? These are questions often asked of the Virginia Commission of Game and Inland Fisheries and other conservation agencies. It isn't always easy to answer such questions, nor to explain why some pet idea of a waterfowl enthusiast is good or not. The purpose of this article is to tell you some of the facts about waterfowl that will help you to decide what is worthwhile effort to attract them.

Nesting Ducks

Very few species of the many kinds of waterfowl that visit Virginia nest here. Our two most frequent nesters are wood ducks and blacks. Some mallards nest in the state—and so, occasionally, do blue-winged teal, shovellers, and hooded mergansers. Your chance of having any, except woodies and blacks, nest on your farm are small.

Studies in various places show that, for nesting purposes, ducks prefer areas where three or four ponds or marshes are scattered within easy flight distance—around half a mile apart or less.

On most small ponds and marshes only a single pair of a species will nest—except wood ducks. Sometimes two female woodies will nest on a single pond, and occasionally lay their eggs in the same nest.

Wood ducks and hooded mergansers usually nest in hollow trees. Both will use nest boxes. Plans showing how to build such a box are available from the Virginia Commission of Game and Inland Fisheries (Reprint D-1). Two apartment nest boxes (back to back) often may harbor two wood duck broods.

It is difficult to describe nesting situations that black ducks find suitable. In a recent nesting study by V. D. Stotts and David E. Davis of black ducks in Maryland, they found about 65 percent of the nests in upland areas, about 19 percent in old duck blinds, and about 17 percent in marshes. They may also nest on hummocks within ponds or in nearby grasses or sedges, but they also nest in fencerows, on stumps and, occasionally, in old nests of crows, grackles, herons, or other large bird nests in trees. Stotts and Davis

found three black duck nests in abandoned great blue heron nests 70 to 90 feet above the ground in loblolly pine trees.

Small platforms set low in ponds and having a lean-to thatched with straw might attract hen blacks—especially if located in a concealed place. Old duck blinds that are roofed over and thatched with grass, or having heavy cedar branches, are especially attractive. According to Stotts and Davis, the old blinds seem to offer the extra cover necessary to conceal the nest. Leaf litter or fluffy straw put on the platform or blind provide material to conceal the nest with. Unconcealed nests in any location are heavily preyed on by crows, raccoons, and other natural predators.

Snapping turtles are probably the most dangerous predator of ducklings. Large bass may also be hazardous. Turtles may be controlled by shooting or trapping. An effective method of controlling snappers consists of setting a post in the pond with the top four inches above water. At the waterline, No. 6/0 fish hooks are strongly nailed in a ring around the post. Chicken offal is put on top of the post for bait. The turtles in striving to reach the bait are caught on the hooks. These traps should be tended often and turtles destroyed.

Migrating Ducks

Twenty-seven species of waterfowl commonly visit Virginia in the fall, winter and early spring. Many of the species are found only on large bodies of water such as bays, lakes and extensive marshes. Five species of ducks, commonly referred to as puddle ducks (blacks, mallards, woodies, blue and green-winged teal), use managed agricultural duck fields, small marshes, ponds and flooded hardwood areas.

The requirements for attracting migratory waterfowl are quite different from those that lure nesters. The secret lies in furnishing food in large quantities. Mallard ducks eat from one to two pounds of grain each week during the winter season, according to V. E. Davison. Ducks do some dry feeding on corn and other large grains; however, the majority of their feeding is done in water. Thus, growing of suitable foods in large amounts and making the food available to ducks involves land and water management.

The managed agricultural duck field is concerned with several things: flat land that can be flooded, dependable water supply, and soil that will hold water. Crops and fertilizer are used that are adapted to the soil. The management of a field is not complicated and is capable of producing 1500 pounds or more of seed per acre . . . a lot of duck food—enough to feed up to 100 ducks per acre during their stay, October to April.

The first consideration is to pick a flat field with soil that will hold water. The slope of the field should be less than one percent. The flatter the field the better, because of the smaller number of dikes needed to hold water on the field. Water-level should be provided to automatically maintain a level in winter, yet permit drainage of the water to at least plow depth during the summer.

The water supply is the second concern. One can't depend upon runoff from fall rains to flood the field. October and November are frequently dry, and dry fields attract few ducks. A source of water may be from a stream, well, or nearby pond. The amount of water available may well determine the size of field that can be established. It takes at least one acre-foot of water to flood each acre in the field all winter. Flooding the field is done by gravity flow or low lift pumps.

For further information on this subject, write for Reprint D-8 from the Game Commission, Box 1642, Richmond 13, Va.

The guidance of a skilled engineer is essential to help you develop a good irrigation and water disposal system. Such help may be available through the local soil conservation district. The careful location, design and building of dams, dikes, levees, water-control devices, and irrigation and water disposal systems are jobs for trained and experienced men. "Do it yourself" jobs of this kind frequently result in disappointments because of too much water, poor design, leakage, soils that will not hold water—and a host of other causes.

What to Plant

The kind of food to grow is the next consideration. Plants for a managed duck field and adaptable to Virginia conditions are corn, browntopmillet, barnyardgrass, Japanese millet and buckwheat. Many other agricultural crops are used by ducks but are not usually recommended for the managed duck field because the seeds deteriorate rapidly under water, or they are difficult to grow.

Corn is a valuable duck food and its production is high. It can be grown for ducks the same way as it is grown for other uses. The best locally adapted varieties and fertilizer requirements for high yields can be obtained from the county agricultural agent or local Soil Conservation Service technician. The one disadvantage of corn is that it requires deeper drainage in the soil during the growing season than other duck foods discussed here.

Browntopmillet is one of the easiest crops to grow and most durable of the cultivated duck foods. The land must be well enough drained to prevent water from standing on the plant during the growing season. The seed of browntopmillet matures in about 60 days after planting.

Browntopmillet will have to be planted every year. It should be planted in July in Virginia. Earlier plantings produce excessive vegetative growth and little more seed. Seed planted in August may not produce mature seed in Virginia. Prepare the seed bed by plowing or disking just before planting time. Plant browntopmillet at the rate of 20 pounds per acre. Drill the seed one-half to one-inch deep or broadcast it and cover the seed by means of a drag. Apply at least 500 pounds of 5-10-5 fertilizer per acre.

Barnyardgrass and a cultivated variety Japanese millet do well on soils too wet for corn and browntopmillet. Japanese millet is preferred for Virginia as it is less chaffy and produces slightly more seeds.

Buckwheat produces well in Virginia and has a high preference rating of use by waterfowl. However, seed yields are generally lower than corn or the three millets. Buckwheat takes from 65 to 75 days to mature. Time of seeding, and fertilizer requirements are the same as for browntopmillet. The seeding rate is three to five pecks per acre.

Flooding the Field

Managed agricultural duck fields are flooded after the seed crop matures—or not later than October 1. The next logical question, "How deep should I flood the field?"; the answer, 15 inches or less. Puddle ducks have difficulty feeding on seeds that are in water deeper than 15 inches. Some fields may have areas of water deeper than 15 inches, yet it would be expensive to level the field. Such fields can be handled by raising the water level a few inches at a time. This puts food progressively under water where ducks can use it as the winter advances.

It is important to leave water on the field all winter even though it freezes during mid winter. As soon as the ice melts in the spring, food is again available. By the spring season the birds are paired off. Abundant food in the spring puts the birds in better condition to continue the spring migration and for reproduction. Banding studies also have shown that birds tend to return to good feeding areas in the fall with the broods they have reared.

Woodland Duck Ponds

Flat bottom lands covered with hardwoods such as beach or oaks are very good sites for woodland duck ponds. The woodland duck pond attracts mallards, blacks and woodies. The site should be flat enough to flood several acres with shallow water (one to 15 inches) during the winter. Low dikes are used to hold water on the area. Water for flooding can be furnished from ponds, reservoirs, and nearby stream or well.

A water control structure should be designed to handle summer rains. Emergency spillways are needed for periods of overflow or heavy rain. Close the water control structures and flood the area around October 15. Keep the area flooded until late March. Do not flood the woodland all year, for that will kill the trees. The flooding of the food (beechnuts and acorns) makes it available to the birds and keeps the seeds from deteriorating. Winter flooding also favors the growth of commercial hardwood trees.

Many other kinds of wetlands beside the managed agricultural duck field or flooded bottomlands can be improved for ducks. There also are management possibilities of producing duck foods on wetlands as well as the agricultural duck field.

Marshes

Natural marsh areas are important waterfowl areas. But the best ones to attract waterfowl are built or modified for the purpose. They can be managed to yield food by manipulation of the water and seeding where needed.

The large open marshes are the kind that usually come to mind when marshes are discussed. Since they are large, few are managed. Natural marshes normally produce small amounts of duck food per acre in comparison to the managed agricultural duck fields. Even though the production of food is low per acre, the extensiveness of large natural marshes make them very important duck areas.

The managed marsh produces considerably more duck food than the natural marsh, yet seldom as much as the duck fields described above. To manage the water on large marshes, large levees are used—often to completely ring a wet area. Drainage ditches and irrigation facilities also are commonly required in order to drain or flood the waterfowl area. On some low sites, pumps are used to drain or flood the field as needed. Flood gates or other large water control devices may also be needed. On saltmarshes, tide gates usually are installed in the levees to permit drainage of fresh-water and irrigation with tide water.

The tidal marsh offers other management possibilities where it is not feasible to build levees. Open water areas attract ducks to marshes. Open water can be provided by plugging guts or constructing dngonts and level ditches. Guts can be blocked off with dirt dams or wier-type structures to stop the tidal action in them. This holds back water and frequently stabilizes the water in the gut so that widgeon-



Water control structure (above) carries drainage water from the field to a lower elevation without erosion. The flash boards maintain a stable water level in the field. Flash boards are removed to drain the field at planting time.



Above, a managed agricultural duck field. Browntopmillet was planted in July, a good seed crop was produced in 55-60 days, and the field flooded in October.



Above, wide spaced corn and browntopmillet planted together in a managed duck field. Below, same field after flooding.



grass (a fine duck food) can grow. Dugouts in vast marshes give open water in areas of dense vegetation. Widgeongrass or sago pondweed (another fine duck food) often grow in the water of dugouts. Level ditches in large marshes provide open water and duck food. Properly constructed level ditches have from $2\frac{1}{2}$ to three acres of open water per mile of ditch.

In upland areas wet or marshy spots often occur. These are dammed to permit flooding. The goal here is to hold as much shallow water as possible on as large an area as you can. (It differs from the ordinary pond, where the objective is to hold a lot of water in a small area.) The dam usually is long and low—with a good spillway and a water control box or gate.

Water Management

The water management that generally will produce the best results in managed marshes in Virginia is to keep the area flooded with up to 24 inches of water from October until the first of June. It is then drained off to allow natural growth to take place or to permit seeding.

In general, woody plants, rank marsh growth (cattails and reeds, for example), and heavy grass sods crowd out more desirable plants. The food that waterfowl are fond of are mainly annual plants that grow on mud flats or perennials that grow under water. In order to produce greater quantities of the better duck foods, it is necessary to create and maintain conditions favorable to their growth. Steps must, therefore, be taken to reduce competitive plants and keep undesirable plants to a minimum. Trees and brush should be removed from areas where waterfowl foods are to grow. Other heavy growth should be plowed out or burned. Occasionally spraying with herbicides is an efficient method of control. Continuous flooding is usually the best and cheapest way to kill out unwanted plants where a water control system has been installed. After most plants are dead from flooding, then the water management plus seeding where needed can be used to produce satisfactory duck foods.

On fresh-water mud flats the two most dependable waterfowl foods are barnyardgrass and smartweed. Barnyardgrass is also known as wild millet or duck millet. There are many species of smartweed. Among the best of these that grow in Virginia are nodding smartweed, water smartweed, marsh smartweed, Pennsylvania smartweed, and dotted smartweed. Ordinarily these plants will volunteer on mud flats exposed in early June provided you first reduce plant competition—and keep it reduced. Where these plants do not volunteer, Japanese millet or one of the smartweeds can be seeded during July on the exposed mud. Seeds of Japanese millet and several smartweeds are available through commercial seed channels or aquatic nurseries. However, seed collected from local sources is often the cheapest method of obtaining barnyardgrass or smartweed.

In brackish or salty water, widgeongrass can be planted. It frequently becomes established naturally, but where it can be found locally a few bushels can be scattered in the water. Widgeongrass usually may be found growing wild in coastal areas but it can also be purchased.

Normally a fish pond is considered a poor duck pond. However, they grow some pondweeds that are used by ducks. In the coastal area of Virginia, sago pondweed is well adapted. It will grow, however, throughout the state. Other good species include longleaf pondweed, floatingleaf pondweed, and claspingleaf pondweed.

Vultures--Significant Disease Carriers?

By FRANK A. HAYES, D.V.M.

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SOME time ago our regional organization incurred an obligation to the Florida Game and Fresh Water Fish Commission pertaining to an inquiry relative to the possible significance of vultures as carriers of disease for domestic livestock. This is a rather touchy matter because of the many implications of this contentious issue, and for this reason a special "vulture file" was created. During this time we have endeavored to acquire and interpret most of the existing, unbiased information relative to the disease carrying capabilities of the eastern turkey vulture (*Cathartes aura septentrionalis*) and the black vulture (*Coragyps atratus*).

After a thorough review of the limited existing literature, and a correlation of the conspicuous lack of published material with our recent personal correspondence and communications, we now feel that an official stand can be taken on this subject. We therefore are availing ourselves of this opportunity to express opinions relative to this controversial issue. For the sake of clarity our contentions have been itemized as follows:

1. There are some indications which suggest that vultures participate, to a limited extent, in the transmission of anthrax. Hutyra, Marx, and Manniger state that according to Marchous and Salembini, anthrax is spread by a form of vulture in Brazil. These birds consume the carcasses of the infected animals and excrete numerous spores in their feces. According to other investigators, crows, foxes, dogs, and jackals may spread infection through their feces. Transmission of this disease also can be readily accomplished through running streams, a number of blood sucking insects, contaminated feeds, fomites such as hides, or man himself. Anthrax, furthermore, is airborne, and high winds with floods, etc., can disseminate the entity much more effectively than can vultures. Thus it can be seen that adequate disposal of infected carcasses is the major key in the control of anthrax.

2. Although positive evidence has not been shown to verify such a statement, it is logical to assume that under certain circumstances, vultures may contribute in the transmission of blackleg by the same mechanisms previously outlined for anthrax. If a properly supervised vaccination program is adhered to by cattlemen, and adequate disposal of carcasses is maintained, this disease does not constitute a problem. If stockmen are lax in either vaccination or disposal, with or without vultures, this disease entity constitutes a continuous threat.

3. There are some unpublished data from certain coastal islands which suggest that vultures have contributed to the spread of hog cholera; however, in this capacity they probably act only as mechanical vectors. There is substantial evidence that the swine cholera virus will not live in the stomachs of these birds. In essence, there are more logical ways whereby cholera is spread, and this constitutes another situation in which a vaccination program under veterinary

Turkey vultures are not significant vectors of disease among livestock or wild animals and should be protected.



supervision is essential. This is a *must* for all swine producers of the Southeast, and vultures participate only in a small way to the spread of this disease, if at all.

4. Some livestock producers are familiar with occasional occurrences where black vultures (*C. atratus*) become predaceous and consume the young of some domestic animals. When this does occur, the black vulture is a very "capable predator," and under such circumstances a problem is presented which only slaughter will correct.

5. For many years the virtues and contributions of vultures have been recognized, and at various times most states have protected these birds. The vultures' value as "carrion disposers" still is undisputed, and it is certain that many of our public highway departments heartily agree with this consensus. In this respect, without these "natural garbage disposals," it is highly probable that public health problems would be incurred that would far overshadow any of the few unlikely evils which these birds might inflict. This factor should merit serious thought before any degree of buzzard eradication is considered.

In view of all evidence to date, either condemning or commending the vultures, we cannot justify any form of eradication for either of the named species of these birds. Instead, we are "old fashioned" enough to consider these creatures as having a definite biological purpose in nature, and that their wholesale slaughter would constitute an abortion of our national heritage. There are many scientific facts that sustain this conviction. A program of this kind would be reminiscent of the unrestricted "hawk killing activities," which persist even today among certain ignorant peoples, who have no concept of the ravages caused by rats and mice when one of the natural controls of these rodents has been foolishly liquidated.

It should be reiterated, however, that there are occasional circumstances within limited local areas when the numbers of black vultures (*C. atratus*) should be temporarily reduced. This applies primarily to situations in which this species has developed predatory inclinations, and not because of any potential as a disease carrier.

In retrospect of that which has been said, our conclusions relative to this subject have been summarized as follows:

A. Insofar as is known, vultures are not significant vectors of disease among livestock or wild animals.

B. Under rare circumstances there may be justification for reducing the population of these birds within a specific locality. This should be with the state's consent and under the supervision of official personnel.

C. Vultures render a service in excess of their sometimes abnormal and very limited predatory habits.

D. There is no scientific evidence to suggest that these birds should not be afforded the protection which was the vogue many years ago.

Adapted from a letter dated February 6, 1961, to Edward B. Chamberlain, Jr., Florida Game and Fresh Water Fish Commission.

CONSERVATIONGRAM

Commission Activities and Late Wildlife News... At A Glance

GAME COMMISSION ISSUES FISHING REPORT. The Virginia Commission of Game and Inland

Fisheries has initiated a weekly fishing report as a service to sportsmen. The weekly roundup will give water conditions and fishing success for all major waters in the state. The information will be phoned directly into Richmond and disseminated by U. P. I. and A. P. wire services that afternoon.

The system presently involves 12 reporters at strategic locations throughout the state. While the report will not be a forecast of fishing success for the weekend, it will certainly give the sportsman an accurate account of fishing reports during the week. This coupled with impending weather conditions should give the fisherman a good basis for planning his weekend activities.

HIGHLAND COUNTY WILDLIFE AREA SLATED FOR PURCHASE. The Virginia Game Commission has been given approval to proceed with the purchase of a 17,700-acre tract of land in Highland County for development as a public hunting area. The tract is being purchased from the H. M. Huber Corporation and will be known as the Highland County Wildlife Management Area. Purchase should be complete by this summer, and the area will be open to public hunting this fall. The tract lies east of Route 220 and is located south of Monterey. Native game species on the area include bear, deer, turkey, grouse, and squirrel.

The area is said to have great fishing potential, although specific fisheries management plans have not yet been announced. Included in the tract are 8.5 miles of trout stream, portions of which were stocked during the past season. A 3.5-mile stretch of the Bullpasture River, one of Virginia's best trout streams, is within the area boundaries, as is a five-mile portion of Benson's Run, a smaller stream which offers excellent fishing for native brook trout. These streams on the area are currently open to public fishing in accordance with statewide regulations.

The Coursey Springs tract in Bath County, scheduled for purchase by the Game Commission for use as a trout rearing station, lies just south of the boundary of the proposed new wildlife management area.

CAMPSITE FACILITIES LIST AVAILABLE. The latest edition of Virginia Public Campsites is now available from the Commission of Game and Inland Fisheries and many other state and federal agencies in Virginia. In addition to camping facilities and regulations on Game Commission-owned wildlife management areas, the eight-page folder lists state parks, national forest camping areas, Appalachian Trail lean-tos, and campgrounds in Shenandoah National Park, along the Blue Ridge Parkway, and on the shores of Kerr Reservoir and Philpott Lake. The number of campsites and the accompanying facilities such as available drinking water, garbage disposal facilities, restrooms and other information of interest to prospective campers is included for each area listed.

Copies of Virginia Public Campsites may be obtained from the Virginia Game Commission, P. O. Box 1642, Richmond 13, Virginia, or from most of the above-mentioned agencies whose campsites are listed.

SPRING HUNTERS BAG THE BIG ONES. Spring turkey hunters managed to bag 129 gobblers during the six-day season held in April, according to Game Commission tag returns. Weights recorded on the kill tags averaged over 18 pounds per bird. Amelia County hunters had the best success, accounting for a total of 39 gobblers. Hunters checked in 21 birds from Powhatan County, 17 from Chesterfield, and 17 from Nottoway (8 included in the 22 bagged on the Camp Pickett Military Reservation), 4 from A. P. Hill Military Reservation, 5 from the Gathright and 4 from the Goshen areas.



Charlie Fox shows how to cast. Step #1.



Step #2—bring rod back.



Step #3—bring rod forward.

A Practical Start To Plug Casting

Text and photos by JOE BROOKS
Richmond, Virginia

THE man who is going into plug casting for the first time may think that one outfit will do the job. But ideally, each plug rod is designed to throw a lure of a specific weight (though all will throw heavier lures and some will throw lighter). Therefore, since pluggers soon find that they want to throw lures of different weight to various species of fish, they also soon find that they need several outfits. For instance, the average light 6 $\frac{1}{4}$ -foot plugging rod is meant to throw $\frac{1}{4}$ -ounce lures; a 6-foot rod will usually be matched with $\frac{3}{8}$ -ounce lures; a 5 $\frac{1}{2}$ -foot rod wants at least a $\frac{5}{8}$ -ounce plug, or even heavier, to bring out the action. And it takes a stout, stiff-action 6-foot 2-inch rod to really put out some of the whoppers of plugs, weighing from 1 to 3 ounces, which are commonly used in salt-water plug casting for big fish.

For a start, however, the plugging novice can choose a medium-weight, 6-foot-long rod that will throw $\frac{1}{4}$ to $\frac{3}{8}$ - or even $\frac{5}{8}$ -ounce lures such as are suitable for plug casting in ponds, lakes and rivers for bass, bream, pike, and in the shallower parts of big water like the Chesapeake Bay, for small stripers. Then he can graduate to heavier or lighter tackle when he has found his sea legs with this basic equipment.

With this rod he can use the traditional open-face, bait-casting reel with level wind, or one of the new enclosed-type reels which utilize the spinning principle. In both types, the limp monofilament is fast taking over from other lines because the monofilament line allows you to cast lighter lures—there being less friction—with less effort, and also allows for more delicate lure play.

In the photographs which accompany this story, one of America's best known exponents of bait casting, Charles K. Fox, of Carlisle, Pennsylvania, demonstrates the use of light plug-casting tackle, while Luke Gorham of Miami, Florida, shows how he handles the bigger outfit used for ocean swimmers.

As shown in picture #1, Charlie Fox holds the rod lightly in the right hand, with reel handles up for freer action and less friction. The thumb rests on the line on the spool,

applying just enough pressure to keep the lure from running out. Note that the wrist is slightly cocked, but not stiff.

The angler sights his target by raising his arm slightly and bending the elbow so the rod grip is at about shoulder height. This position will permit ease of wrist action, and wrist action is probably more important in plug casting than in any other form of casting. Now he lines up the target with the lowest guide on the rod.

From this starting position he comes back smartly, as shown in picture #2, stopping the rod at the 2 o'clock position. The elbow has changed position very slightly—almost all the action has been in the forearm.

In picture #3 he brings the rod forward with great speed, turning the wrist over (forward) and extending the arm somewhat. As the rod reaches the 10 o'clock position, he releases the thumb pressure on the spool and the lure shoots on out, as shown in picture #4.

In the ideal position at the end of the cast, the wrist is up, the handles on top, and the lure has hit the water precisely on the target as lined up through the lowest rod guide.

Now the angler quickly transfers the rod to his left hand, maintaining pressure on the line with his left thumb to prevent run-out, and as shown in picture #5, he is ready to retrieve. Once he has control of the line through the reel handles, he slips the left hand forward of the reel as shown in picture #6 and takes the line between thumb and forefinger, putting on a light pressure which helps lay the line on the spool tighter and also frees it of water or dirt.

The difference in the use of the closed-face, plug-casting reel lies in the mechanics of the equipment rather than in the cast. The enclosed reels, when used for plug casting, fit on top of a rod with a recessed reel seat (while the same reel, when used for spinning, fits under the rod and calls for a straight reel seat). With the enclosed type reel, the angler releases the line by simply touching a button rather than thumbing the line, and this point is one of the main sources for the great popularity of these "spin cast" reels—no backlashes.

#7—ready to spin cast.

#8—bring





Step #4—release thumb pressure on spool.



Step #5—transfer rod to left hand.



Step #6—ready to retrieve.

As shown in picture #7, the reel handles are up. With these reels the drag is set in advance and instead of thumbing the line, the thumb rests on the line-release button. Again the target is sighted through the lowest rod guide, the rod is brought back to the 2 o'clock position, as shown in picture #8, brought forward smartly, and as it comes through the 1 o'clock position the thumb button is released. The arm carries on through to the 10 o'clock position and the lure shoots out to the target.

The main point of difficulty is to release the button at exactly the right time. Too soon, and the lure goes straight up; too late, and it drives into the water. But a little practice will soon give good timing and from then on it's only a matter of adjusting slightly when lure weights are varied.

As with the conventional plugging outfit, the rod butt is brought in against the stomach for the retrieve and the line held in the fingers of the left hand. Note in picture #10 how Charlie Fox cups the reel against the butt of the left hand for a good steady hold, ideal for retrieving, striking, or playing a fish.

As with all kinds of fishing, wind is often the plug caster's bane. When he finds that he must cast into a driving wind, Charlie makes the usual cast but releases the lure a bit later than usual, thrusts down hard with the rod tip and comes down on the right knee at the same time, as shown in picture #11. It is surprising how well such a cast will go out into the wind.

In the past 10 years another form of plug casting has become popular in salt water, especially in Florida for big tarpon and such game fish. It could be a very productive way of catching stripers, too.

The heavy gear used for this kind of casting utilizes a 6-foot, 2-ounce rod weighing 5 ounces, and the plugging reel is equipped with cub drag and 15-pound test monofilament line. With this outfit you can throw a 3-ounce lure a mile and work it beautifully, giving it fast jerks, making it jump forward and look alive. These big outfits will handle a lure as light as 1 ounce comfortably, however, and if you have

no other outfit with you, you can even cast a $\frac{5}{8}$ -ounce lure well enough to get hits.

The heavy gear is also suitable for jigging, using a heavy bucktail and letting it go down into deep holes until it hits the bottom, then winding it in a couple of feet and imparting up-and-down jerks to the jig. And you can use surface plugs up to an ounce and a half, off points, around rocks, over deep flats in water up to 8-feet deep, along the edges of channels, at inlets, even in the guts of marshes, where sometimes great beady-eyed monsters lurk with open mouths, ready to smash and crash a big juicy offering. You can make these plugs talk striper talk, soft, alluring, enticing, a "come and get me" sort of thing that makes the stripes on a rock's sides quiver in anticipation.

A belt pouch or gimbel is good to use with this outfit as it gives for steadiness, allows better rod manipulation and saves you from punching holes in your stomach as you fight a big fish.

Casting with the heavy plug gear calls for a somewhat different technique than is used with the lighter rods. Most of these big rods have a straight reel seat, and they are equipped with a foregrip above the reel. As shown in picture #12, the hold Luke Gorham uses is very similar to that you might take on a golf club. The right hand holds the rod, with thumb on top and fingers coming around under the grip and closing lightly on it. The thumb rests on the reel spool. The left hand holds the butt of the grip behind and tight against the right hand, the thumb lying along the grip between the fingers and the base of the right thumb.

The cast is started with the rod held back and slightly down, as shown in picture #12. Then the rod is brought forward, with a snap of the wrists at the moment the angler wants to release the lure. At the same time he gets his shoulder into the cast. He is aiming well above the parallel to the water and he stops the rod at about a 40-degree angle, pointing at the target, as shown in picture #13.

Once the lure hits the water, he brings the rod butt in to the belt gimbel or against his stomach, then, holding the rod

#9—lure shoots to target.



#10—cup reel for retrieve.



#11—casting into wind.





#12—Luke Gorham holds heavy rod.



#13—stop rod at 40-degree angle.



#14—reeling in.



#15—grip for backhand cast.



#16—start with rod back and down.



#17—bring up with snap of wrists.

Heavy gear such as that shown here is used for plug casting in salt water for tarpon and striped bass.



#18—how to hold the reel when fighting a big fish.

in the left hand, grasps the handle with the right hand and starts reeling the lure in as in picture #14. From this position it is possible to manipulate a lure any way you wish, working the rod tip fast or slow, up or down, or retrieving

in a straight bring-back.

Many times anglers using heavy gear are in boats and because of other passengers are unable to make a right-hand cast and must make their throw backhand. This calls for quite a different grip. The right hand takes the same position as for the regular cast but the left hand moves up on the foregrip, with the back of the hand toward the ground, as shown in picture #15. Picture #16 shows how the cast is started with rod back and slightly down. In #17 it is brought forward and up, again with a snap of the wrists and the follow-through with the shoulder, and the wrists rolling over at the end of the throw. Once again the angler is ready to bring the rod butt in to the gimbel and start his retrieve.

Some of the reels used in heavy plug casting are equipped with cub drag, which means that the angler holds the reel handles still while the fish runs and the line peels off the spool. With small fish you can hold the handles with your fingers but with a big fish a sudden lunge could easily pull the handles from your grasp, with a resultant messy backlash and a lost fish. So the best way to hold the reel when fighting a big fish is to place the right hand over the handles, letting one knob project between thumb and forefinger, the other knob between little finger and the one next to it; or as Luke shows in picture #18, the second knob cupped in the hand.

Picture #19 illustrates the size of this equipment. At a glance it will be obvious that to throw such a big, wind-resistant lure into the wind is next to impossible. Even in a slight breeze, the angler who is using such equipment should quarter the wind, or cast with it, or he can be sure he'll wind up with an unhealthy backlash.



#19—these pictures illustrate the size of the plugs used with this casting technique. They can't be cast into the wind without creating backlash problems.

Grunt 'em up!

By MAURICE NAGGIAR

CATALPA worms are great fish bait. Bream often go berserk over a succulent fresh water shrimp. The 'gator flea and the cricket are frequently red hot producers. But if I should be restricted to only one kind of bait, the lowly earthworm would be my choice.

Once upon a time whenever I got fish hungry I would grab up a worm digging shovel and head for the edge of the swamp or into a nearby bayhead or hammock. Every fishing trip was preceded by an hour or so of shovel work.

But that was before I learned about the art of grunting 'em up. It happened when I was ramming around in the big Apalachicola Swamp in Florida.

Working the scull oar as quietly as possible, I eased the bateau down-current through the brushy tunnel that marked the course of the narrow, swampborn creek. The sound was becoming more distinct now—grum-m-m scre-e-p, grum-m-m scre-e-p, grum-m-m scre-e-p, grum-m-m scre-e-p grum-m-m scre-e-p—over and over in monotonous discordance. The racket consisted of a deep-throated grunting rumble followed by a muted screech of rising inflection as though coming from some creature in abject terror or mortal pain.

Then under the combined urgings of current and scull oar, the boat swung around a sharp bend in the creek and I confronted, at spitting distance, the source of that unearthly racket. No panther, nor bear, nor stricken porker, nor demon of the swamp greeted my eyes. I beheld, crouched on the ground, the figure of "Cappy" Hatcock, fisherman deluxe.

I ran the bateau up against the bank, climbed out, and stood watching the show in bewildered fascination. Back and forth in slow, measured cadence, "Cappy" rubbed the flat side of an axe over a dry hardwood stake driven into the soil. He peered this way and that, obviously expecting something to happen. Then I spotted a large earthworm writhing about on the ground, then another and another until there were a dozen or more squirming about. "Cappy" stopped scraping and began picking up the worms.

"Beats digging them," he grinned. "You can get a week's supply and never turn a spade full of dirt."

That was my introduction to the time-honored Cracker art of worm "grunting." Since then I do all my fish bait gathering with an 18-inch length of dry oak and a hatchet. The technique is simplicity itself.

Select a spot where you know worms are to be found. Drive the stake into the ground until only four or five inches remain above the surface. Take the axe or hatchet in hand and with long, even strokes work the flat side of the blade back and forth. Within three or four minutes, the worms will begin to show on the surface. Keep up the "grunting" for another couple of minutes; then begin picking up your bait.

After you have "grunted" out one spot, move on fifty yards or so and begin the process again. The range of the "grunter" varies with the conditions but a circular area of 20 feet in diameter will probably hit the average. It works every place I have ever tried it and that is quite a few.



Commission Photo by Kesteloo

Try the time-honored Cracker art of worm "grunting."

Earthworms

By ROBERTS MANN and DAVID H. THOMPSON

CONSIDER the worm. Not as excellent bait for fish, nor as food for robins, but as Charles Darwin concluded after years of patient study and experiment: "It may be doubted whether there are many other animals which have played so important a part in the history of the world as these lowly organized creatures."

A great variety of animals affect the soil structure and soil fertility—some tiny like mites and thrips; some large like the groundhog and other burrowing mammals—but, in woodlands, earthworms are the most important of them all. To a lesser extent perhaps, the same is true in gardens, lawns, fields and grasslands of regions having an annual rainfall of 15 inches or more.

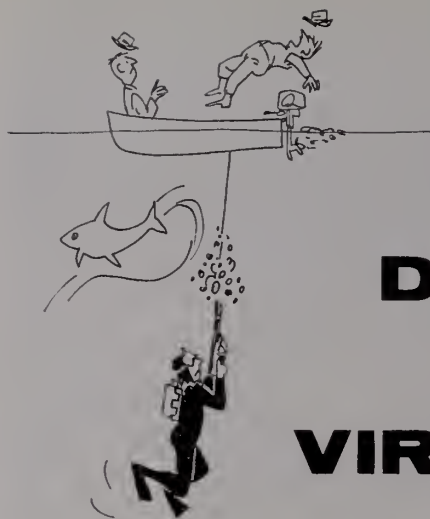
There are about 2,200 described species of earthworms in the world. They vary from small kinds, such as the one-inch Tree Worms that live under rotting wood and bark, to the gigantic kinds found in tropical countries—some of them seven or more feet long when fully stretched out.

In addition to our native earthworms, several species have been introduced from Europe. All of our common kinds are strictly nocturnal and spend most of their lives underground but the big one we call the "night crawler" is typical. They have no eyes but are so sensitive to light that bright sunlight will kill them. Turn over a boulder or log and you may see several quickly draw their bodies back into their burrows. They have no ears but are extremely sensitive to vibrations such as those produced in the ground by humans or other animals approaching. They must have coolness and moisture. They live in burrows which extend straight down at first, then wind about irregularly and may terminate in a cozy chamber below the frost line, from three to eight feet down, where dozens or hundreds huddle in a close-packed ball, thru winter, to conserve moisture.

From spring until fall they live in the upper two feet of the soil but, unless "drowned out" by a heavy rain, in daytime they commonly lie in their burrows with their heads near the surface. On warm damp nights an earthworm, with its tail anchored in the burrow, emerges and stretches out in search of food such as leaves, winged seeds like those of the maples and elms, and grass clippings. These may be dragged down into the burrow and the soft parts eaten, or used to plug the burrow entrance and conserve moisture during hot days. Many seeds are "planted" in this way. Worms reduce the surface litter and mix it with the topsoil. They literally eat their way thru the earth, deriving food from the rich topsoil and humus. They bring subsoil to the surface in the form of pellets or "castings" which we see around the entrances to their burrows. They mix topsoil with the mineral subsoil and vice versa. Their burrows make channels thru which water, air and plant roots can pass readily into the subsoil. The work they do is prodigious.

Darwin estimated that 50,000 worms per acre may carry more than 18 tons of soil to the surface in a single year.

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SKIN DIVING IN VIRGINIA

Text and photos by RONALD F. MARION
Richmond, Virginia

IN many respects, man is like a sponge. He lives at the bottom of a vast sea of air. Until the last century, all he could ever hope to do was to rove around in an ever smaller, two dimensional world, tripping often. For when a man's eyes are on the birds, he does not see obstacles in the path ahead. Although man had progressed to the point where he thought he was master of his own destiny, two great obstacles still remained for him: the air that enveloped him, and the sea that surrounded him. Of the two, the hundred-mile-deep sea of air was the lesser adversary. In less than sixty years, groping, fumbling humanity has placed a hesitant toe on the threshold of space. The door was opened and the prod of international insecurity expedited further investigation and exploration. There remains only the sea.

Landlocked creature that he is, it has taken man many years to penetrate the mysteries of the sea that lie beyond the first few feet. All beneath the surface remained an enigma to him without gills or fins, or even the ability to see more than a few hazy feet. The "hard hat" diver, eventually, could walk along the bottom of the sea but only as a clumsy, overweight interloper, limited, as he was, with lead boots, distended balloon of a suit and the serpentine umbilicus that was his life link of air with the tenders above. And yet, except for a few refinements, this is as far as we have gone for extended work beneath the surface.

Henry Ford caused the world to shrink, in a pre-sanforized era. The Wrights enabled man to explore the realm of the birds. Captain Jacques Cousteau allowed the man with the inquiring mind to explore the unexplored, to zoom, dart, and dive with complete freedom in an alien world. He developed



No matter how shallow the dive or how short the duration, a careful pre-dive inspection of equipment (as at left) is necessary. A depth gauge, life preserver, knife, and weight belt are underwater necessities. A prime rule of diving is never dive alone. At right, a pair of divers surface to boast a newly speared flounder.

the aqualung. With flippers instead of fins, a regulator and tank for gills, and a mask to enable eyes, not constructed for use underwater, to see, a normally terrestrial human acquires a weightless three dimensional freedom approached only by future spacemen.

Television has made the *scuba* diver (using self-contained underwater breathing apparatus) a virtual man of iron. With exposure suit and mask for armor, he slashes left and right with lance and short sword at figments of the imaginations of desk-borne television writers. Virginia waters hold no such horrors. True, there are dangers. There are creatures that, although lacking the hostile attitudes of their TV counterparts, are to be avoided. There are more than ten kinds of sharks found in the waters of the state of Virginia. There is no record of any fatalities having occurred, in Virginia, due to shark bites. There is also no record of sharks that read records. So, sharks are to be avoided.

Stingrays sting when stingrays should sting: when they are trod upon. This usually occurs when entering the water from a sloping beach. Dragging your feet along the bottom lets them know you are there, and they generally move to less congested waters. The inclusion of the blundering jelly-fish winds up the list of "heinous monsters" usually encountered in our waters.

There being no evidence to the contrary, it may be assumed that before man first beat the brains out of a marauding saber-toothed tiger, he first thoroughly tested the new technique by the lapidation of a few assorted friends

No sea monster here—just a diver utilizing his carbon dioxide-inflated life preserver as an aid during a long return swim to the boat. Some type of inflatable life preserver should always be worn when diving.



and neighbors. Since then, man himself has always been number one on the list of his own enemies. Things have not changed. Because there are more efficient methods of self destruction, the inexperienced diver who goes alone and uninstructed to try out his new gear will probably not kill himself. Of course, each subsequent dive tends to lower the odds on his safe return rather than raise them from experience. Diving, like driving and flying, needs to be *taught*. The first rule of skin diving is **NEVER DIVE ALONE!**

Instruction in the use of skin diving equipment is not difficult to get. There are many organized clubs in the state that will be glad to either check you out in your new equipment or direct you to someone who will do so. A partial list of diving clubs is included later. What would be only an irritating incident ashore could be a fatal occurrence in the alien world of the sea. Proper drill and instruction in emergency clearing procedure can reduce the flooding of a mask or mouthpiece from a panic incurring development for the novice, to a condition easily corrected by the diver with proper instruction in clearing his equipment. A complete shutdown of breathing equipment would be of little danger at depths about 50 feet. Fifty feet is not considered a deep dive and two people can use a single lung for extended periods. Again, it's all in knowing how.



Attired in full diving equipment, the diver becomes a creature no longer of the shore, but one of the sea. The foam neoprene exposure suit 3/16" thick, offers protection from deep cold water and stinging jellyfish. The weight belt trims for natural buoyancy. The wrist-watch-like object is a depth gauge. The diver at right is leaping from the fantail of the boat. The mask is held firmly in place so it is not lost on impact with the water.

If the two preceding paragraphs have not frightened you off, we may now delve into the delights of skin diving. The state of Virginia has one of the longest and most attractive seacoasts north of Florida. The beaches are gentle and inviting, and the climate is good. The Chesapeake Bay is rather shallow from the diver's point of view, but holds an abundance of adventure for him. Although it lacks the coral beauty of the more southern waters, the Virginia coastal waters should not be sold short. At first, the bottom appears empty. Then, as the diver hovers weightlessly a few seconds, a myriad of tiny creatures filter through the Brownian movement of sand and algae at the limit of vision. The observer becomes the observed. Seeing that no danger exists here, life goes on as usual. It is possible to sit for hours in water a little over a man's head and watch a thousand activities, that have no beginning and no end, take place before your eyes.

Spearfishing offers another diving diversion. The diver can look over the crop before shooting. What other fisherman can do that? I say he can *look* over the crop before shooting. There are many fish that are sighted that cannot be taken. It takes as high a degree of stealth and ability to stalk a fish as it does a deer . . . perhaps more. Underwater, the diver has only his ability to see, and then only a "tunnel vision" limited by his mask. He can hear sounds but cannot tell from which direction, and fish swim silently. A relatively large fish offers an almost impossibly narrow target facing the diver so all shots are defective. A surprising thing often happens to the new diver with a spear through his first large fish. He finds himself being dragged along, not realizing that he is trimmed to a state of weightlessness in this strange environment. A knife is always carried underwater to cut loose a fish that is just too big or is going too deep. It comes in very handy in the event that he becomes enmeshed in old fish nets or thick seaweed.

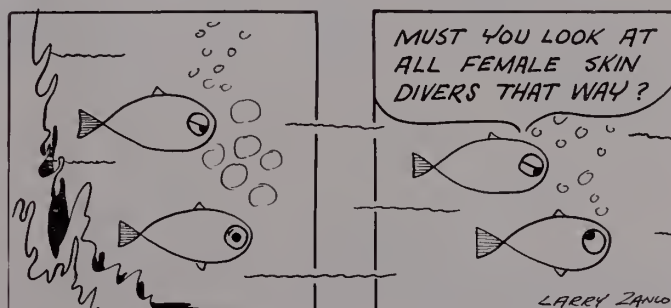
At one time or another in a person's life, thoughts turn to the discovery of hidden treasure. The neophyte diver envisions a sunken Spanish galleon, resting upright in the sand with ubiquitous fish swimming through still intact rigging and sails. This is probably the way the television writers would have it. Although wrecks there are, this is not the way you would see them. The sea is much too tidy for that. Any wooden hulk would soon be reduced to nothing by worms and abrasive sand. Even steel hulks do not last too long. The storm-tossed waters off the Virginia coast abound in wrecks. The more adventurous diver will find the exploration of sunken vessels to his liking. Explorations of this

nature are usually carried out by groups of divers such as clubs. Locations of choice wrecks are usually carefully guarded secrets. The identification of newly found wrecks can be a source of many hours of "topside" enjoyment. In reality, many interesting wreck sites may be found by merely consulting U. S. Coast and Geodetic Survey nautical charts printed by the U. S. Government Printing Office. As a diver, you will find treasure galore. Not the treasure of Spanish doubloons (although the possibility does exist), but the treasure of seeing that which has not been viewed by man before. The experience of hovering over a relic of a bygone era can certainly be classed among the inventory of a man's personal treasures.

The story goes that a passenger on an ocean liner remarked that it was an awfully big sea. The old skipper, mingling among the passengers, as skippers must do these days, overheard the comment and with a faraway look in his eyes that must have seen back to the days when iron men sailed wooden ships answered, "Yes, ma'm, and that's only the top of it."

Roster Of Skin Diving Clubs

Capiton Catfish 9002 Manchester Road Silver Springs, Maryland	E. R. Schumacher 421 Butler Drive Midway Park, North Carolina
Chesapeake Mariners 2615 Taney Road Baltimore 9, Maryland	John Scofield 2516 East Place Georgetown, Washington, D. C.
Continental Skin Divers, Ltd. 2 West Chesapeake Avenue Towson, Maryland	Tidewater Skin Divers Assn. C/o Vic's Caterers 3134 East Princess Ann Road Norfolk, Virginia
Lung Luggers 172 Hawthorne Drive Danville, Virginia	Undersea Explorers Club P. O. Box 934 Richmond, Virginia
Maryland Waterbugs 104 La Paix Lane Baltimore 4, Maryland	



Fishing Gear and Bait

By DOROTHY E. ALLEN
Education Officer

OUR objectives are:

1. To learn a little about equipment and bait needed for fishing.
2. To learn how to clean the fish you'll hook.

Tackle

Bait-casting tackle includes a special rod made of bamboo, steel or glass that is four to seven feet in length. The rod has an offset in the handle to hold the casting reel. The casting reel holds the line and usually has a "level wind" on it to keep the line evenly wound on the spool for ease in casting. The nylon line used with the casting outfit is from eight- to 20-pound test. Plugs, spoons and spinners are used for lures. Because the lures are large and heavy, they can be cast to the desired location in the water and then reeled in to resemble something alive and desirable for the fish to strike at. This equipment is good for largemouth bass, walleye, and pike.

The *spin-fishing* rod is light and made of bamboo or glass, five to seven feet in length. The rod has special graduated guides mounted on it with the largest guide being near the handle. The spinning reel has a stationary spool and the line is wound on with an arm or bail. The line used is thread-like and is usually monofilament nylon of four- to 10-pound test. Small artificial baits (spinners, plugs, spoons) are used with this equipment. Small lures are used and can be cast a great distance with ease and accuracy. Spin fishermen will catch all types of fish including bass, walleye, and panfish.

The *fly* fishermen use a long rod seven to nine feet in length made of bamboo, steel or glass. The fly reel may be manual or automatic; its only function is to store line. A heavy nylon or silk line is used with the fly rod and may be a level line (the same thickness and weight from one end to the other), a tapered line (smaller diameter and weight near the end where the lure is attached), or a torpedo line (heavier on the end where the lure is attached than in the center). The fly rod and line is used like a whip to cast very

light artificial flies, poppers, bugs and imitations. Fly fishing often catches more fish than any other method using artificial lures because it employs small lures similar to the food of most fish. Fly fishing is excellent for trout, bluegill, and bass.

For youngsters under six, a light cane pole, bobber, line, hook and worms can't be beat—nothing to get out of whack.

Six- to ten-year-olds have developed coordination to advance beyond a cane pole. Today's "push button" reels take all the snarls out of casting. Some are available in neat, compact outfits with the reel built right into the rod. Add a small tackle box with a half-dozen artificial lures (two for surface fishing, one silver flash and white, one black for late evening or night fishing; two for shallow to medium-deep fishing; and two deep-running lures, one a lead-headed bait with a flashing spinner and a white and black bucktail tipped with a white piece of pork rind, the other lure a bottom-hugging type and any color similar to those of a minnow), plus an assortment of hooks, bobbers, and sinkers. A pair of pliers is also handy for pulling hooks out of catfish jaws.

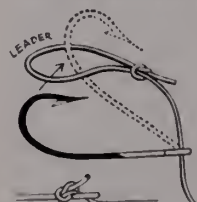
For older boys a good spin-casting outfit will be appropriate for fresh-water fishing from bluegills and bullheads right up the ladder to crappies, bass, pike and trout. Choose about one dozen assorted lures of various colors to do a job of fishing topwater, bottom bumping, or weedless fishing back in the lily pads and duckweed. More depends on how the lure is used than on the bait itself. The action of the lure is what will outwit that fish. A stringer on which to put your fish, insect repellent, sunburn lotion, long-nose pliers, casting bobbers, line, hooks, and snap swivels will be needed.

The introduction to fly fishing is an event of monumental proportions. "Technique" is the password. Study of the habits of the fish gives way to the technique of presenting a fly.

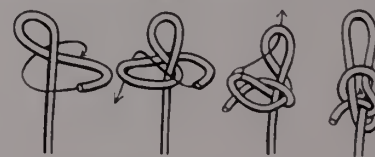
Knots and Hooks

For tying a hook, popping bug, plug, fly, etc., to the end of a line or leader use a *Turtle* knot. The fly tackle enthusiast must also tie leader to a line. First make a *Perfection Loop* in the end of the leader for attaching to flyline. To attach flyline to leader loop, tie the *Tucked Sheet Bend*.

Use the right size hook, for this is very important. For bluegills, since their mouths are small, a number 12, 10, or

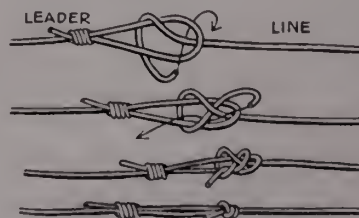


TURTLE KNOT



PERFECTION LOOPKNOT

Beginning fishermen should familiarize themselves with these three basic knots.



TUCKED SHEET BENDKNOT

Attention, Teacher

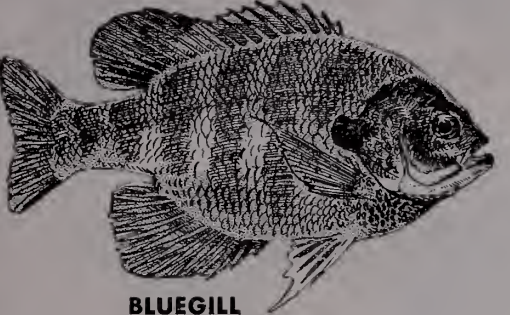







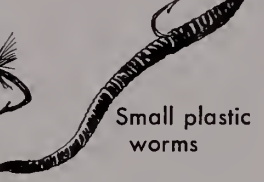




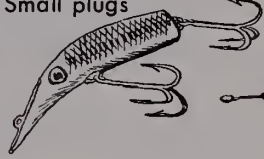
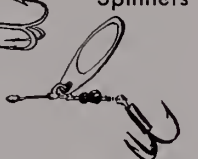










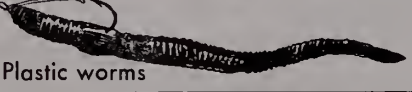





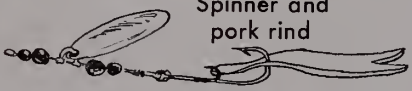


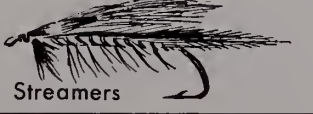
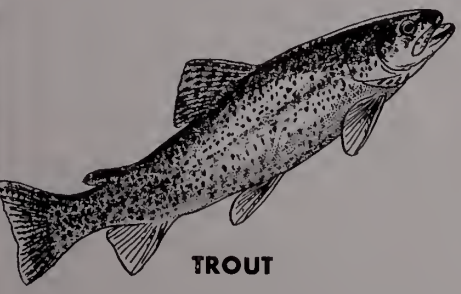


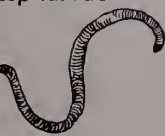
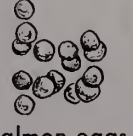


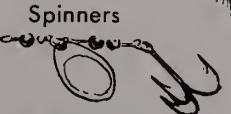


This is the conclusion of our "fish study" unit. I hope by now you and your students have been bitten by the fishing bug. Every year more than 30 million people in the United States go fishing simply because it's fun, and it's most fun when you catch fish! It's not that fish are hard to catch; the seeking out is what seems difficult. A true fisherman may inquire about your luck but he won't expect you to reveal that secret location. A fisherman's badge is brush welts across the face and arms, and usually his companions are mosquitoes, sweat and sunburn. The solitude of fishing, where one can completely relax and where that mountain of a problem becomes a molehill, is well worth the scratches, bites and "peeling" skin. As Izaak Walton said, the art of angling is "employment for your idle time, which is not then idly spent . . . a rest to your mind, a cheerer to your spirits, a diverter of sadness, a calmer of unquiet thoughts, a moderator of passions, a procurer of contentedness."

In summarizing this unit one might come to the conclusion that by far the most important factor in successful fishing is the skill of the individual angler—his knowledge of fish habits and habitat, choice of lures and his know-how in using them.

FISH

NATURAL BAIT

ARTIFICIAL LURE

 <p>BLUEGILL</p>	<p>Grey Crickets</p>  <p>Grubs</p>  <p>Caterpillars</p>  <p>Earthworms</p> 	<p>Popping bugs</p>  <p>Sponge bugs</p>  <p>Wet flies</p>  <p>Small plastic worms</p> 
 <p>CRAPPIE</p>	<p>Minnows</p>  <p>Earthworms</p>  <p>Freshwater Shrimp</p> 	<p>Small plugs</p>  <p>Spinners</p>  <p>Streamers</p>  <p>Nymphs</p> 
 <p>LARGEMOUTH BASS</p>	<p>Minnows</p>  <p>Frogs</p>  <p>Salamanders</p> 	<p>Diving plugs</p>  <p>Spinners</p>  <p>Plunkers</p>  <p>Bugs</p>  <p>Plastic worms</p> 
 <p>SMALLMOUTH BASS</p>	<p>Minnows</p>  <p>Hellgrammites</p>  <p>Crayfish</p>  <p>Worms</p> 	<p>Spinner and pork rind</p>  <p>Nymphs</p>  <p>Dry flies</p>  <p>Streamers</p> 
 <p>TROUT</p>	<p>Wasp larvae</p>  <p>Grasshoppers</p>  <p>Small Worms</p>  <p>Salmon eggs</p> 	<p>Wet flies</p>  <p>Nymphs</p>  <p>Spinners</p>  <p>Hair bugs</p>  <p>Streamers</p> 

8 is the correct size. Use larger hooks—6/0, 2/0, or 2—for bass.

Bait

A can filled with dirt and earthworms you've dug yourself is a must. Actually, almost anything handy will do for bait. A well fortified ten-year-old has separate tobacco cans for crickets, ants, grasshoppers, and grubs. Time spent gathering bait is time spent in fun and anticipation to hooking a fish.

Ranking high among the insects as a form of fish bait is the grasshopper. Almost every form of fresh-water game fish can be caught with grasshoppers. For the young fisherman, this is tops. The age-old method of snaking up on the grasshopper and catching it with your hand is as good a way as any, provided you are quicker than the grasshopper! Obtain an old fruit jar, punch a few holes in the lid, and you have a fine grasshopper cage.

The grasshopper should be hooked through the hard surface of the body, just in front of the wings and about the middle of the side of the body. This allows free movement of the insect to attract more fish.

Live bait such as worms, crayfish and crickets can easily be raised in large numbers for sale to bait dealers or for your own individual use.

Where to Go Fishing

Send for "Public Fishing Waters of Virginia" (Game Commission-controlled ponds)—Digest E-3. Also review our fishing laws. Send for "Summary of Virginia Fish Laws 1962 Season"—Digest A-6.

The Hooked Fish

Fish spoil rapidly in warm weather. Keep live fish on a stringer or in a container in shaded water. If a cord stringer is used it should never be run through the gills, or the fish will be unable to breathe properly and will soon die. String it through the lower lip. Kill and clean the fish as quickly as possible.

Cleaning fish is a matter of removing scales or skin, head and entrails. To scale, hold flat (a clipboard is handy to hold the fish flat by putting its tail under the clip) and rub spoon, fish scaler, or knife toward head. Dip fingers in salt to hold slippery fish. Slit the fish straight up the belly from the vent (anal opening) to the lower jaw. Grasp gills and pull out entrails and all in one movement. Cut off head and gills. To remove fins, cut down to fin roots and with knife and thumb (or pliers) jerk fin toward head. Wash quickly and dry.

Suggested Activities

To Get Bait

1. Select a likely place for earthworms—rather damp and shaded area or a well fertilized plot. Push a shovel into the ground up to its handle. Take a good-sized stick or another shovel and rapidly drag it across the handle of the shovel dug in the earth. A vibration is set up in the ground. After doing this for a few minutes, watch to see if earthworms crawl to the surface.

2. Pour a bucket or pan of warm suds water on the ground. Wait until the water soaks in the earth. Do any earthworms crawl to the surface?

Fishing Bait

3. It has been said that a wise angler carries a pack of chewing gum. Here's why. When a fussy bass refuses to take any of your fly offerings, chew a piece of gum until it becomes sticky and put it on a bare hook. Then catch some of the flying-type flies in the area. Stick one on the gum and cast it out. The fish are almost certain to show interest. See if you can catch a fish by offering it chewing gum.



OUT FISHIN'

A feller isn't thinkin' mean, Out fishin';	A feller has no time for hate, Out fishin';
His thoughts are mostly good and clean, Out fishin';	He isn't eager to be great, Out fishin';
He doesn't knock his fellow men, Or harbor any grudges then; A feller's at his finest when Out fishin'.	He isn't thinkin' thoughts of self; Or goods stacked high upon a shelf, But he is always just himself, Out fishin'.
The rich are comrades to the poor, Out fishin'	A feller's glad to be a friend, Out fishin';
All brothers of a common lure, Out fishin';	A helpin' hand he'll always lend, Out fishin';
The urchin with the pin an' string Can chum with millionaire an' king;	A brotherhood of rod an' line An' sky an' stream is always fine; Men come real close to God's design,
Vain pride is a forgotten thing Out fishin';	Out fishin';
A feller gits a chance to dream, Out fishin'	A feller isn't plotting schemes, Out fishin';
He learns the beauties of a stream, Out fishin';	He's only busy with his dreams, Out fishin';
An' he can wash his soul in air That isn't foul with selfish care, An' relish plain an' simple fare Out fishin'.	His livery is a coat of tan, His creed:—to do the best he can; A feller's always mostly man, Out fishin'.

—Louisiana Conservationist

* * * * *

Some Reference Materials

- "101 Approved Recipes for Delicious Virginia Seafoods." Commission of Fisheries of Virginia. Booklet.
- "Back Bay Area." Commission of Game and Inland Fisheries. Information and map.
- Bowman, N. R., and Shumate, D. L., Jr. "Fishing in Virginia's Piedmont," *Virginia Wildlife*, XIX (May, 1958). Reprint.
- Brooks, Joe. "A Practical Start to Fly Fishing," *Virginia Wildlife*, XXIII (April, 1962).
- Brooks, Joe. "A Practical Start to Spin Casting," *Virginia Wildlife*, XXIII (May, 1962).
- Brooks, Joe. "A Practical Start to Plug Casting," *Virginia Wildlife*, XXIII (July, 1962).
- Hoffman, Jack. "Fishing in the Northwest Valley-Mountain Area of Virginia," *Virginia Wildlife*, XIX (July, 1958). Reprint.
- "Public Fishing Waters of Virginia." Commission of Game and Inland Fisheries. Digest E-3.
- Rogers, Claude. "Distance in the High Surf," *Virginia Wildlife*, XXIII (June, 1962).
- Sheridan, Jack. "Fish for Fun," *Virginia Wildlife* XXII (May, 1961). Reprint E-7.
- Shomon, J. J. "Fishing in Virginia's Tidewater," *Virginia Wildlife*, XIX (April, 1958). Reprint.
- "Summary of Virginia Fish Laws 1962." Commission of Game and Inland Fisheries. Digest A-6.

These 16-mm motion pictures are available from the game commission: Battling Bass (sound, color, 10 minutes), Boating Safety (sound, color, 24 minutes), Channel Bass and Stripers (sound, black and white, 11 minutes), Tie Your Own Flies (sound, black and white, 10 minutes).



Bird of the Month:

The Baltimore Oriole

By DR. J. J. MURRAY
Lexington, Virginia

ONE of the most brilliant and at the same time one of the most retiring of our summer visitors is the Baltimore oriole. In early May through the Valley of Virginia its rich, flute-like whistle is heard on all sides in our towns, yet the singer is not easily seen. Occasionally he chooses to fly like a golden flash across the open between two trees, but it is surprising indeed how such a showy bird can hide behind a half-grown poplar leaf.

When some early settler saw that this oriole was clad in the striking orange and black colors of Lord Baltimore, the bird was given the name of the patron of Maryland. Few of our birds are so richly marked. In the male the head, upper back, wings, except for the white bars, and the center of the tail are black, with the rest of the plumage a gorgeous reddish orange. The female, as is so often the case, is duller than the male, though lovely enough in her own right. In general she is brownish where her partner is black, with a duller yellow-orange rump and underparts. Altogether, they make a very satisfactory pair to those who love birds and bright colors.

Next to the beauty of the birds, the most interesting thing about the Baltimore oriole is its remarkable nest. It is a deep and intricately built pouch, swaying in the wind from

the end of a long branch. The female, who constructs the nest under the approving eye of her mate, is a skillful weaver. The nest is firmly fashioned of plant fibers, grasses, and hair, supplemented wherever they are available by strings and strips of cloth.

The bird watcher can assist by hanging such materials on the lower branches of a tree, being careful, however, not to make the pieces long enough to trap the bird. There are cases on record where the oriole has hung herself with cords.

In this snug cradle from four to six eggs are laid around the middle of May. Like the nest, the egg is a work of art, white in base and strongly marked with designs that resemble Arabic letters or ancient hieroglyphics. The nest with its young birds swinging in the breeze calls to mind Walt Whitman's famous line: "Out of the cradle endlessly rocking."

In Virginia this bird is to be seen from April 20 to October 15. It summers in the upper part of the Eastern Shore, in northern Virginia, and throughout the State from the upper Piedmont west, but is only a scarce transient in Tidewater. The Baltimore oriole is supposed to leave our State when cold weather comes, but in recent years we have had an increasing number of winter records, particularly in the coastal plain.



Edited by DOROTHY ALLEN



Photo by John Brandon

Graduates of the South Hill Rifle and Pistol Association's hunter safety course: 1st row, front—Michael Callis, Monty Rainey, Julian Jackson, Melvin Oakley, Pat Hough; 2nd row—Mike Hough, Glenn Johnson, Lyle Lacy, Malcolm Leonard, Ashley Armistead; 3rd row—Hance Hoffer, James Bryson, Cleveland Tanner, Billy Crowder, William Jackson, Dorsey Tunstall, Frankie Malone. Instructors were M. M. Crawford, W. W. Fanning, W. B. Malone, E. P. Johnson.

Youth Hunter Safety Course

Not all boys with guns are a menace to society. With so much talk about juvenile crime and trouble, it is good to know that there are those boys and girls who want to learn respect and enjoy firearms. It is also good to know that there are men willing to take the time to teach these young people the proper use of firearms.

One such group has just completed its first hunter safety course for boys and girls. The South Hill Rifle and Pistol Association has just granted credits to 16 boys who have taken part in the classes. The course was taught in two class sessions of three hours each. The boys met on Saturdays and were taught gun safety and gun handling, hunter responsibility (to other hunters, as well as property), and a review of the Virginia game laws. In March the club began a new class made up of Boy Scouts from one of the local troops.

It is hoped that these classes will not only promote gun safety and good sportsmanship, but will be the basis for a Junior Rifle Club. The classes are open to boys and girls from 11 to 18 and have the approval of the state and local police and the Game Commission.

John Z. Brandon, Minister

The Methodist Church, La Crosse, Va.

Young Hunters Complete Course

Ten young Richmond Nimrods, ages 13 and 14, have completed the prescribed NRA-Game Commission hunter safety course. The course, consisting of training in proper gun handling, hunter responsibility, hunter-landowner relations and actual firing, was conducted by B. Armistead Burke, chairman of the Richmond Chapter, Izaak Walton League's hunter safety program, and Joe Bellamy, state game warden.



Richmond Times-Dispatch Photo
Proper gun handling technique is demonstrated by B. A. Burke in the safety course conducted under the supervision of J. N. Kerrick, Game Commission safety training officer.

Blair Junior High School

The seventh grade science class taught by Mrs. Sullivan had an outstanding exhibit at the Tidewater Academy Science Fair. It depicted fishing and oystering in the Tidewater area. The Tidewater Peninsula, with its many inlets, was carved out of cardboard and nailed to a plywood stand—designed by the pupils. Small models, such as an oyster boat with a man tonging for oysters and a man scooping up fish "with a net," were used to show normal activities of the area.



The Blair Junior High School seventh-grade class taught by Mrs. Sullivan prepared this exhibit for the Tidewater Academy Science Fair.



One of the displays erected by the Spottswood F.F.A. Chapter.

Wildlife Conservation Project

This year the Spottswood F. F. A. Chapter sponsored a wildlife conservation project. Its members worked hard to accomplish the following objectives: feeding wildlife during periods of precarious food supply; mixing and distributing feed during deep snows; putting on at least two programs for the public; preparing displays (see picture); setting out food patches for game birds; writing newspaper and magazine articles about their work; and participating in radio programs.

Gretna FFA Chapter

The Gretna FFA Chapter is busy promoting wildlife conservation. They have erected several wildlife exhibits, at the Danville Fair, in two places of business in Gretna, and in the Gretna High School.

During the past year 400 pounds of seed for food and cover plantings have been distributed and 2½ acres of wildlife food patches planted. Twenty-four members plan to plant food patches of approximately one-fourth acre each. It has presented three wildlife radio programs. Other activities of the chapter include feeding wildlife during the heavy snows, building nesting boxes for squirrels and birds, and piling brush for rabbit cover.

The Gretna Chapter is competing for the wildlife plaque for work done in wildlife conservation for the southside area.

A. B. Culbertson, Agriculture

Instructor, Gretna High School



Edited by HARRY GILLAM
**Chief Midyette Succumbs to
Recent Illness**

James Webb Midyette, 69, chief of the Game Commission's law enforcement division, died May 31 following a six-month illness. Funeral services were held June 2 in his home town, Ashland, Virginia, at the Duncan Memorial Methodist Church, where he had taken an active part as Sunday school teacher and member of the Board of Stewards. He was buried at the Woodlawn Cemetery attended by nearly 100 of his uniformed field force who served as honorary pallbearers.

"Webb" began work with the Commission of Game and Inland Fisheries as Stafford County game warden in 1927 and was promoted to supervisor of wardens in northwestern Virginia in 1933. He was appointed law enforcement chief in 1952 and served actively in that capacity until sudden illness late in 1961 forced him to take a leave of absence from his post.

Chief Midyette was an extremely popular administrator and his far-sighted policy of "education instead of irritation" in the enforcement of Virginia's fish and game laws will continue to guide Virginia game wardens for years to come.

Safety On The Go

Wardens of the Hampton Roads District completed a six-hour Hunter Safety Course and were awarded instructor credentials on April 19, 1962. All of the Virginia Game Commission's game wardens, and most of its biologists, have now been certified as hunter safety instructors.

The Commission hopes to certify at least 2,000 instructors and see no less than 40,000 students graduated from the hunter safety course within a period of two years. Sportsmen and sportsmen's clubs are encouraged to contact their local game warden and obtain full information as to how they can sponsor a hunter safety program. Material for the hunter safety course can be obtained free of charge by contacting the Safety

Training Officer, Virginia Commission of Game and Inland Fisheries, P. O. Box 1642, Richmond 13, Virginia.

**Udall Establishes Bureau Of
Outdoor Recreation**

Carrying out President Kennedy's instructions regarding the coordination of Federal outdoor recreation programs, Secretary of the Interior Stewart L. Udall April 2 signed an order establishing a Bureau of Outdoor Recreation in the Department.

Dr. Edward C. Crafts, of Chevy Chase, Maryland, was appointed Director of the new bureau. Dr. Crafts, a career Federal employee, had been serving as Assistant Chief of the Forest Service of the Department of Agriculture.

The Outdoor Recreation Resource Review Commission recommended the creation of the bureau in its January 31 report, and President Kennedy, in his special message on conservation transmitted to Congress on March 1, said the recommendation would be adopted.

In the message, President Kennedy said: "This bureau will carry out the planning functions already assigned to the Department of the Interior and will administer the program of Federal assistance to State agencies. . . . This new bureau will serve as the focal point within the Federal Government for the many activities related to outdoor recreation."

Dr. Crafts is a forester with 29 years of Federal service. A native of Illinois, he attended Dartmouth College and holds B.F., M.F., and Ph.D. degrees from the University of Michigan. His career began in forest and range research for the Forest Service in Utah, Arizona and New Mexico, and forest economics research in California.

Secretary Udall created the new bureau under the authority conferred on him by Reorganization Plan #3, approved by the 82nd Congress in 1950.

Besides administering the current State cooperative services under 1936 legislation and the proposed State assistance program on which legislation will soon be submitted, the new bureau will assist the Secretary in carrying out his

Federal outdoor recreation coordination responsibilities, sponsor and conduct recreation research, conduct recreation resource surveys, develop a nationwide recreation plan, and disseminate outdoor recreation information.

**"A Nature Center For Your
Community"**

To implement a program of better acquainting people with the concept of community nature centers and with advisory services now offered in this connection by its newly established Nature Centers Division, the National Audubon Society has published a 40-page pamphlet entitled "A Nature Center For Your Community." Its author is Joseph J. Shomon, director of NCD and former editor of *Virginia Wildlife* magazine.

In the preface of the publication, Carl W. Buchheister, Audubon Society president, says: "One of the pressing problems in America is how to make conservation of our natural resources meaningful to our people. The problem is particularly serious in our expanding cities and suburbs where men, women and children are losing contact with the land and nature in general. . . . One way in which men, women and children can develop a greater sense of personal values is to open their eyes and hearts to the dynamic outdoor world. To do this we must have natural lands for them to visit."

Generously illustrated with 55 photos, some filling an entire page, the pamphlet is a handsome publication designed to remind its readers of the inspiring beauties of the natural world and imbue them with the desire to safeguard natural resources so important to man, by providing open space in their own communities. These areas may serve as natural outdoor laboratories for school children and others, where physical features and ecology of natural communities can be studied and "quality" recreation enjoyed. Copies of the pamphlet may be obtained for \$1.00 per copy from the Nature Centers Division, National Audubon Society, 1130 Fifth Avenue, New York 28, N. Y.

ON THE WATERFRONT



Edited by JIM KERRICK

CGA Squadron Organized In Radford Area

A detached squadron of Roanoke's USCGA Flotilla 93 has been organized among Radford, Pulaski and Christiansburg boat owners to operate principally on Claytor Lake. It is headed by James F. Rutherford and Dr. H. R. Hartwell. Training classes were begun on April 2.

Meeting in the Radford Recreation Building on first and fourth Mondays, the squadron now numbers some 20 members in addition to the more than 20 members of the parent Roanoke flotilla, commanded by William Procejus.

It is expected that more than 20 qualified boat examiners will be performing courtesy examinations on Claytor Lake during the boating season this spring and summer.

Water Survival

Under actual conditions, people around the water participating in boating, sailing, hunting and fishing are usually heavily dressed for protection against the cold, according to Professor Robert William Buckley, Department of Physical Education for men, University of Washington. The water is often rough or choppy and sometimes distances to safety are great.

There is a definite need for standardizing instruction in "clothing swimming." Most textbooks teach clothing inflation, outlining only procedures for disrobing and inflating garments that have been removed from the body. It has been proved that people can be taught to inflate the clothing they are wearing. Without removing a single object, people very low in swimming proficiency can be taught to splash air into their shirt or jacket while being worn. They can be taught to keep air in their trouser legs by falling or jumping into the water, bending their knees slightly and coming up and raising their knees to the surface about the same time their heads break the surface. This should be done face up, hips low and feet remaining under water.



Photo by Jim Lee

Be sure your boat's running lights meet state and Coast Guard requirements.

Let's look at some of the advantages of keeping the clothes on the body instead of disrobing:

1. Clothing protects the body from the initial shock of hitting cold water and allows the swimmer to adjust to the cold a little more gradually in order to get his breath.
2. It offers support for the first few critical moments when panic is likely to strike the swimmer. He may be able to calm down and more rationally plan his course to safety.
3. Clothing protects the body from prolonged exposure. Sometimes rescue is many minutes, if not hours, away. In

many places cold is a cruel enemy and causes loss of life to even the strongest swimmer. Water trapped within successive layers of clothing acts as an insulator against the outside cold. Water coming in contact with the skin warms up, thus cutting down exposure to cold. Alert instructors in the military service taught men in South Pacific waters the advantages of keeping their clothing on for protection against the sun, predatory marine life, and rocks and reefs when swimming to safety.

4. Remaining dressed eliminates dangers of becoming entangled in the clothes. Clothing is not damaged as a result of inflating it on the body. Clothing can be inflated in much less time than it takes to disrobe.

5. It takes less time to teach inflation than to teach disrobing.

Suggested Inflation Test

Simplicity should be stressed in testing. Keep in mind—poor swimmers need inflation techniques requiring little skill. The good swimmers can usually survive their mistakes.

Test #1. Dressed in cotton shirt and trousers. Completely button shirt, including collar button; roll down sleeves and button. Jump into water, feet first; pull out front shirt tail; splash air into shirt. These things should be accomplished within 10 seconds. Remain air-borne, re-inflating from time to time when necessary for support.

Test #2. Jump into water feet first, bringing knees to surface just a little ahead of feet and head. Air is trapped in trousers above the knees. Become motionless and air-borne within 10 seconds after hitting the water.

Boating Accidents

In the event of a death or damage resulting in excess of \$1500.00 an accident report shall be submitted within 48 hours. For every other reportable accident a written report shall be submitted within 10 days. All boating accidents should be submitted to the Safety Officer, Commission of Game and Inland Fisheries, P. O. Box 1642, Richmond 13, Virginia.



LETTERS

More On Hunting Seasons

I AM a subscriber to the excellent magazine, *VIRGINIA WILDLIFE*, and would like to put in my two-cents worth regarding a change of season dates for small game hunting. The editorial was quite interesting and informative although I favor a slightly different set of dates.

All of my hunting trips have been in and around Shenandoah County, one of the "northern areas." For the past several years we have had quite dry weather during early squirrel season, which, added to the fact that nearly all the leaves were still on the trees and nearly all food on the ground, adds up to poor hunting, in my book.

I would favor a small game season opening November 10 or as near then as possible with deer and bear opening two weeks later. This, in my opinion, would also make it more feasible to extend the "any deer" season to a full week, or the same as buck-season dates. I would favor squirrel season opening October 15 and staying open if hunting pressure is not too great.

I am not an avid turkey hunter but agree that the opening dates for turkeys be earlier than for deer.

These comments are offered not as a gripe but in an effort to utilize our resources on a continuing basis.

Ernest M. Hottel
Springfield, Virginia

I'VE just finished reading the editorial in the October issue of *VIRGINIA WILDLIFE*. As an outsider looking in on the commission and its problems, I would like to offer a suggestion that may or may not be worth trying.

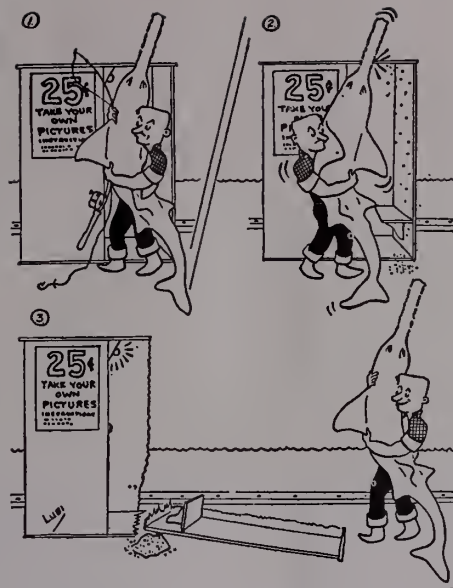
It seems to me that, in a state that offers such a variety of both climate and geography, a system of regions rather than single counties would greatly aid the commission in its goal of wildlife management and sportsman participation in the harvest of game.

The state could be divided into 10 or 12 regions, dependent upon the factors that must be considered in carrying out the goals of the commission. Hunting seasons could then be set each year, for each region, dependent upon the best conservation principles. An early season could be set in regions 1, 3, 5, and 10 for small game birds. This area may cover an area of 20 counties, more or less. Other areas or regions could then be opened or closed as conditions dictate.

There is always the problem of exceptions. A region that included several counties may have one or two counties that the commission finds should be closed to hunting of a certain species. These exceptions can then be listed under that region; such as, region 1, squirrel closed, County X.

For the deer season, I would prefer a later opening date—first Monday in December. With the regional setup, this species could be hunted earlier or later, as the commission would then be in a position to regulate each area according to the best principles of conservation.

J. E. Pierce
Annandale, Virginia



PLEASE send me a free booklet about Virginia game laws. When I'm big I want to respect and help animals.

David Duff
Lynchburg, Virginia

I READ your magazine monthly and think it's one of the best. About the early squirrel season, I think the supervisors or game wardens west of the Blue Ridge should set the season. As it stands now in Washington County there aren't enough squirrels to argue over. Gentlemen and sportsmen, let's face facts. First, look at our timber or woodland. Where is it? We all know that all hardwood is in demand. Squirrels cannot live without hickory, ash, beech, etc. If anyone will come to this county and see the destruction of our timber, I grant he won't argue over seasons. What isn't cut is ridden down or bulldozed out by the roots.

I can't see why anyone would want to shoot quail in October; they are only $\frac{1}{2}$ to $\frac{2}{3}$ grown. Quail raise two broods each year, the first from May 15 to July 4 and the second from July 15 to September 1. So how in common sense can anyone want to gun for $\frac{1}{3}$ to $\frac{1}{2}$ grown birds? And who would want

to hunt quail or grouse without a dog? It would be so hot that a dog couldn't work. The bloom on the sage grass and ragweed would kill a dog's nose completely.

One fellow stated that it was too cold to hunt when the small game season opened. I don't believe he has hunted yet. I've hunted 5° below zero and kept warm. Believe me, if he will go with me one day when it's cold, he won't have any trouble keeping warm.

Let's leave the season as it is except if the commission wants to change deer season to an earlier date or from Dec. 1 to 15. That would be okay. I can't see why we shoot our deer right in the middle of the rut period. I say, let's move it up, not backwards. That way we will have fatter and larger deer also.

I thought the published season was only on squirrels. But I notice it's all small game. I like to hunt deer, quail, grouse, squirrels, or anything; it doesn't matter. Just so I can get out and relax and forget about everything except to wonder where the dog is and whether she's on point.

When I was a boy I shot for the market, which I haven't forgotten. Talk about the poachers or about the predators; neither can compare with a man gunning for money. My gun has done a lot more damage than a housecat or a hawk. So, let's put the blame where it belongs, not on something that can't help himself. It all adds up to one thing—shotgunning, and not for fun.

There aren't too many deer or grouse or anything killed out of season due to our game law enforcement officers—not half as many as are crippled in season by someone who can't shoot—or someone who will shoot a deer, quail or grouse, and say, "Oh well, let him go; we'll find another in a few minutes."

So, let's leave the season as it is in Washington County, please, except deer (change from December 1 to 15). When we kill a quail or grouse, we won't have to carry a deep freeze with us to keep from losing it. Keep the *WILDLIFE* going; it's a wonderful book.

William V. Roberts
Abingdon, Virginia

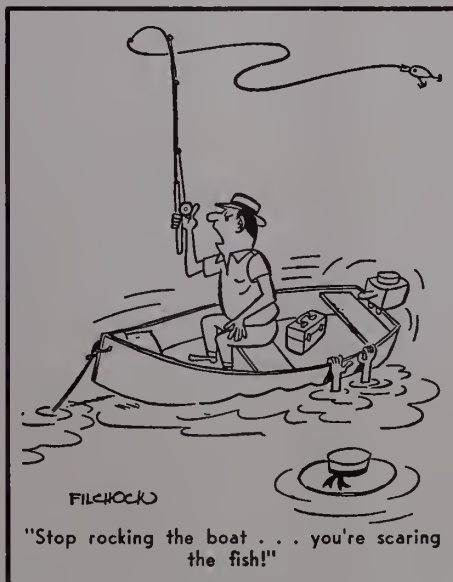
A Bird Lover

IN 1945 I lived in a garage apartment about 150 feet from our present house with an open lot between. Early every morning when a male cardinal I called Red perched on the rail of the little kitchen porch and sang for food, I got up and put out the food. Red called his family and they came to eat with him. The next year I moved to my present home. We put up a bird feeder at once, and one morning I was putting out the bird food when a red streak came flying from my former home. A cardinal perched on my hat and then flew to the feeding station. Red had found me. And I, a bird lover, had a bird again.

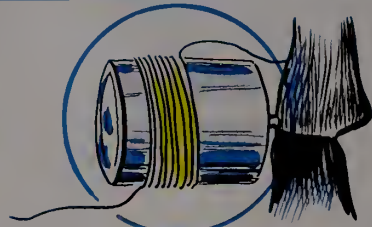
Mary Bell Starke
Virginia Beach, Virginia

WOULDN'T think of being without *VIRGINIA WILDLIFE*. Gives me a lot of ideas for my outdoor column.

Dudley B. Heiliger
Consulting Fish Culturist—Fish Pond Specialist 1921-22nd Avenue, Gulfport, Miss.



Bow-fishing for Carp and Gar



A reel of some type holds the heavy line attached to the arrow. A smooth can fastened to the bow works well.

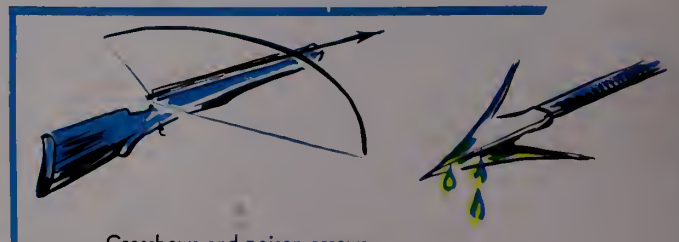


Carp move into shallow water for spawning during late spring. Try for fish right on the surface.

Bow-fishing for carp and gar is a fast-growing sport. These fish may be taken with bow and arrow in all public waters of Virginia, except those stocked with trout, from March 1 through October 31 during daylight hours.



Gar surface during mid-summer for best shots. Tough scales often prevent good arrow penetration.



Crossbows and poison arrows are prohibited.